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ABSTRACT

This workbook is designed to provide helpful tips and useful information for anyone interested in a technical career. Through the ten chapters presented, information is provided to help the user select a career field of study, design a program of courses, verify that the program is correct, investigate possible schools, get through course work, overcome typical problems, and draw a continuing education plan. Charts and forms are included that allow the user to write in answers for specific activities. Chapter 1, Definition of a Technician, discusses typical employment activities, briefly describes twenty-three technology programs, and offers a list of resource materials. Chapter 2, Select a Career Field, provides a list of questions for assessing one's job preferences and provides addresses for professional groups in the technology field. Chapter 3, Check out the Career, offers a prioritized list of contacts to aid in making a career decision. Chapter 4, Take A Personal Inventory, primarily focuses on sources of educational credits. Outlines for a program of study, including selecting educational methods and investigating colleges, and adjusting to classes and the educational environment are discussed in chapters 5 through 8. Chapter 9 offers tips for succeeding in school, and chapter 10 discusses how to plan for the future in relation to the changing job market for technological careers. (SH)

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TECHNICIAN

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CAREER WITH A FUTURE

A PLAN WORKBOOK

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Dedicated to my mother who is always asking that I write.

And special thanks go out to Jack Roemer, Lawrence Drees, and Edwin Bergmann for each allowing me the privilege and luxury of experience.

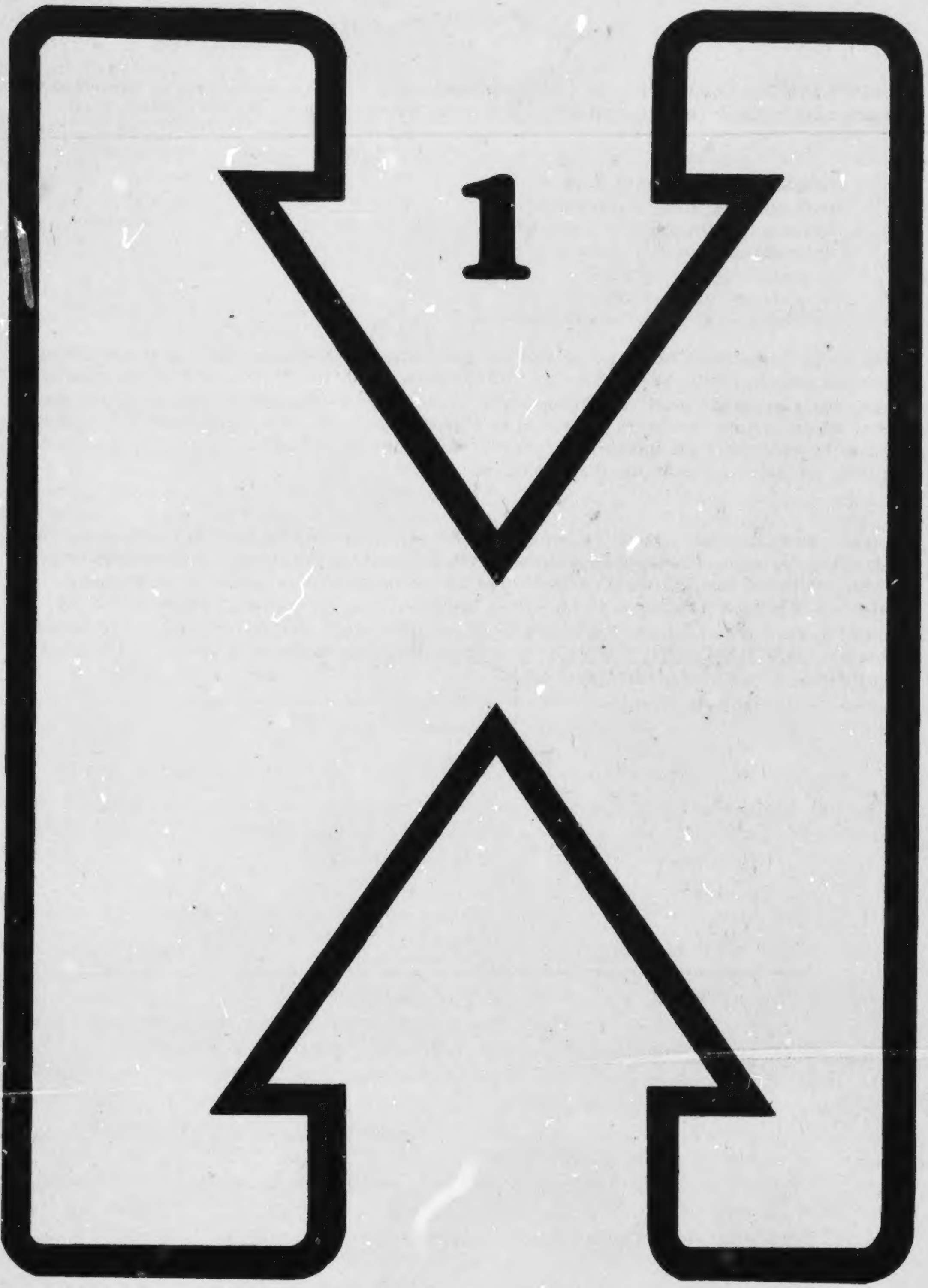
PREFACE

TECHNICIAN is a book filled with helpful tips and useful information for anyone interested in a technical career. Useful information is included that will help you to:

...to select a career field of study.
...to design a program of courses.
...to verify that the program is correct.
...to investigate possible schools.
...to get through course work.
...to overcome typical problems.
...to draw a continuing education plan.

In this book, the words school and college are used interchangeably to mean technical institute, community college, junior college, four year university, and military school as long as the school has a 13th and 14th grade level technically oriented curriculum of practically directed training for careers which require two years or less of college training. These schools typically emphasize practical courses designed specifically for career preparation. Most of these courses should be taught by professionals with practical experience.

Increasing scientific and engineering knowledge has caused a need for more workers on scientific and engineering teams. Demand for qualified up-to-date technicians is high. Yet, to date, no guide has been published that will assist students to enter and succeed in technician level programs. The satisfaction of being a member of an important team makes technician work exciting, inviting, and certainly a career with a future. Yet how is a student to know of these positions and related training programs? TECHNICIAN: Career with a future seeks to challenge students to consider the opportunities and succeed in this career goal.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CHAPTER ONE

Definition of a TECHNICIAN

An emergining level of employment with great potential for growth is that of the technician. But not many people know what a technician does, where a technician works, nor who can become a technician. More familiar levels of employment are craftsman, engineer, and scientist. Now, because of the expanding quantity of knowledge, additional levels have been assigned to fill-in the range of tasks to be performed. On an employment continuum, two added levels are: technician and technologist. A technologist is the next step up for a technician. With added experience and education, in fact, a technician becomes a technologist. Technicians work many technical areas. (See pages 12, 13, and 14.)

Technician is a relatively new level. Back when Thomas Edison developed the incandescent lamp in 1879, he was considered to be a scientist. He designed an apparatus, wrote a description, made sketches, and wrote what the item was to do. Edison would then turn these plans over to John Kruesi, the craftsman who worked for Edison. The description, sketches, and instructions were converted to a working model. Edison would make tests and direct improvements. Kruesi would make the adjustments. This team of scientist and craftsman worked well together when the quantity of theory knowledge was small.

But today, a team composed of a scientist and craftsman would not be able to function. Communication would be a big problem. The scientist has a vocabulary of theories, equations, and probabilities. The craftsman has a vocabulary of tolerances, specifications, and technique. As a result, someone who knows enough about each level is needed to translate. This person can be a technician.

Typical Employment Activities

The engineering team of today has many members. (See the definitions accepted as standard on page 10.) Each has a specific function to perform. The following are typical activities carried out by technicians:

☐ Assist in the design of systems, processes, and equipment.
☐ Assist in the diagnosis of production or test problems and in the instigation of corrective action.
☐ Assist in the training of technical staff.
☐ Calibrate or make adjustments to fairly complex equipment.
☐ Compile and evaluate experimental data, prepare reports and make recommendations.
☐ Conduct time and motion studies and assist in developing work standards.
☐ Construct working models or prototypes for pilot plant operations to test production methods, processes, or equipment.
☐ Examine instructions, select standard or non-standard procedures, techniques and equipment to complete assignments.
☐ Interpret specifications for machinery, tools, and plant equipment and prepare or modify drawings.
☐ Prepare detailed estimates of time, quantities of material and labor required for activities such as testing.
☐ Supervise the activities of other junior technicians and skilled craftsmen.

ENGINEERING TEAM MEMBERS

The Craftsman. The craftsman typically prefers to work with power or hand tools on physical objects in their installation, maintenance or trouble-shooting. Most craftsmen have developed unusual skills and take a deep pride in how well they can make, install, or repair something. Their full-time schooling may include post-high school training in a technical institute for some but for others a technical or vocational high school program. Their Training may involve a 4-year formal apprenticeship or informal on-the-job training.

The Technician. The engineering or physical science technician often uses the ideas or carries out the technical plan of the engineer or scientist. They are frequently the doers rather than either the innovators or the designers, although they may do some design or similar work. They are important practical persons with a sound understanding of scientific principles, of testing and measuring devices, and of practical techniques. High school preparation may include either general or college preparatory courses. Normally it will include elementary algebra, often intermediate algebra, and a physical science but not usually a foreign language. A number of persons with high school equivalency certificates can be accepted in many technician programs of study. The technician's education after high school typically requires two years of full-time collegiate-level day study or 3 to 4 years of part-time evening study 3 to 4 nights per week. This is usually taken in a technical institute (or junior or community college technical program) which leads in most cases to an associate degree. Associate degree courses normally include college algebra and trigonometry, and basic calculus (in some curricula), report writing, considerable laboratory science and training in equipment application and operation.

The Technologist. The engineering technologist is typically a practical person interested in applying engineering principles and in organizing people for industrial production, construction or operation or in the improvement of devices, processes, methods or procedures. Ordinarily one will deal with various components of an overall system designed and developed by engineers. This role evolved during the 1960's and will continue to evolve in the coming decades as a technically trained organizer-doer probably more often than as an innovator. In research and development one may be the liaison between scientist or engineer on the one hand, and craftsman on the other. High school preparation often is like that of the technician. College education is often an extension of a 2-year associate degree program of full-time study to a 4-year Bachelor of Engineering Technology full-time program. Graduates of the 2-year associate degree engineering technology programs usually will qualify for transfer into the third year of the Bachelor of Engineering Technology programs. The educational emphasis of the technologist's program is less theoretical, and less mathematical than that of the engineering counterpart but is more hardware and process-oriented. Typically, the technologist, as compared with the engineering technician, receives a broader education with more emphasis on the humanities and technical disciplines and greater depth of background in mathematics and science. The technologist's education, like that of the engineer and the scientist, should continue through lifetime.

The Engineer. The engineer is primarily an innovator or creator of NEW products, processes, procedures, or systems, who is interested in: how to solve specific practical problems (through the use of mathematics, knowledge of science and practical judgement) and how to do that economically. Typically, the engineer puts science to work to solve problems. But one may become involved in technical sales or even may become a technical manager. The engineer's high school preparation in mathematics (preferably through advanced algebra) should be from well above average to excellent. One should demonstrate an interest in and good ability to read scientific material, maintain average or good grades in English, have good study habits, possess good analytical and creative abilities, and understand people. The educational preparation after high school begins with either a 4 to 5 year full-time day engineering program, or an 8 to 10 year evening educational program. Study and work experience should continue to expand one's engineering background throughout their lifetime.

The Scientist. The scientist is typically the theoretician, the developer of hypotheses, the searcher for truth and the formulator of broad or basic ideas, the discoverer and categorizer of knowledge whose interest lies chiefly in what occurs and why. High school preparation should include above average performance in mathematics and the physical sciences, satisfactory work in English, and, if possible, a foreign language. Post-high school education preparations begins with 7 to 8 years of full-time day (or longer part-time) undergraduate and graduate study, through the Ph.D. degree. It continues throughout lifetime. One is expected to do research, to prepare articles for publication, to add to knowledge in the field, and to keep informed of new knowledge and theory. One's concern is usually with knowledge rather than its application or costs.

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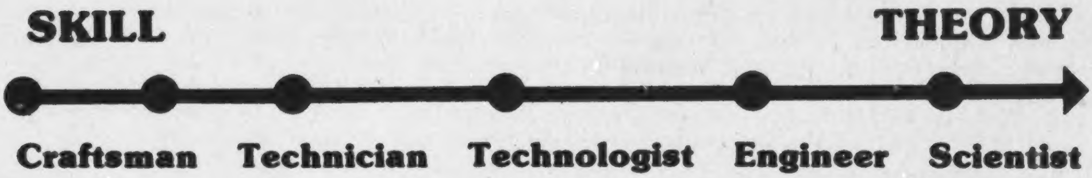
Technicians Solve Problems

Technical education is concerned with that body of knowledge organized in a planned sequence of classroom and laboratory experiences, usually at the postsecondary level, to prepare one for a cluster of job opportunities in a specialized field of technology. The program of instruction normally includes the study of the underlying sciences and supporting mathematics inherent in a technology, as well as methods, skills, materials, and processes commonly used and services performed in technology. A planned sequence of study and extensive knowledge in a field of specialization is required in technical education, including competency in the basic communications skills and related general education. Technical education prepares for the occupational area between the skilled craftsman and the professional person such as the doctor, the engineer, and the scientist.

The technical education curriculum must be so structured that it prepares the graduate to enter a job and be productive with a minimum of additional training after employment, provides a background of knowledge and skills which will enable the graduate to advance with the developments in the technology, and enables the graduate, with a reasonable amount of experience and additional education, to advance into positions of increased responsibility.

The technician is frequently employed in direct support of the professional employee. For example, the engineering technician will be capable of performing such duties as assisting in the following engineering functions: designing, developing, testing, modifying of products and processes, planning production, writing reports, preparing estimates, analyzing and diagnosing technical problems and solving a wide range of technical problems by applying background in the technical specialties.

Engineering Team Continuum



Technology Education

Reprints from the Final Report of an Engineering Technology Education Study by the American Society for Engineering Education are in the Appendix:

- Changes in Engineering Technician Education (page 90).
- Roots of Baccalaureate Technology Education (page 90).
- Employment of Technicians and Technologists (page 91).

This booklet describing all aspects of Technology Education can be purchased for $2.00 from:

American Society for Engineering Education
One DuPont Circle
Washington, D.C. 20036

Technology Program Descriptions

Aeronautical Technology
A planned program of classroom and laboratory experiences, including mathematics, the physical sciences, and a combination of aerodynamics, structures, materials, and electronics as applied to the design, testing, and development of aircraft. This program is designed to produce the ability to understand the propulsion, control, and guidance system of the airplane, and to collect pertinent engineering data in a research-and-development activity. This program prepares the graduate to work in direct support of the engineer in the aerospace industry.

Agricultural Machinery and Equipment Technology
Specialized learning experiences in properties of soils, characteristics of crop growth, and the development of knowledge and understandings concerning mechanisms, control systems, and materials-handling as applied to the design, development, testing, and manufacture of agricultural machinery and equipment.

Agricultural Technology
Specialized classroom and laboratory learning experiences in physical sciences, mathematics, and specialty courses dealing with farm machinery, farm structures, and rural electrification, designed to prepare the graduate to work in direct support of the agricultural engineer.

Architectural Technology
A program of instruction designed to provide the student with knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills combined with laboratory experiences including creative design, testing, and model building which will enable one to be supportive to the architect and the architectural engineer. The subject matter is concerned with design, estimating, inspection, supervision, and contracts and specifications--primarily on the field of building construction--with emphasis on the art of form.

Automotive Technology
A sequence of classroom and laboratory experiences including the study of scientific and mathematical principles which lead to understanding of the design, development, and testing of internal combustion engines and related component parts of the motor vehicle, including transmissions, electrical systems, and braking systems. This program is planned to prepare the graduate to perform duties concerned with designing, testing, and development in direct support of the automotive engineer.

Chemical Technology
A program of instruction designed to provide the student with knowledge of scientific principles. mathematical concepts, and communicative and technical skills combined with appropriate laboratory experiences. The subject matter emphasizes qualitative, quantitative and analytical analyses in general and organic chemistry. In the unit operation laboratory, material handling, crushing, grinding, and sizing are studied.

Civil Technology
A planned program of classroom and laboratory experiences including the study of physical science, mathematics, surveying, strength of materials, and other specialty courses leading to preparation for designing, testing, and supervising the construction of highways, railroads, airports, bridges, harbors, irrigation works, sanitary plants, and other structures. The graduate works in direct support of the civil engineer.

Commercial Pilot Training
A program of classroom instruction and practical experience, including mathematics and the appropriate physical sciences, designed to prepare the student to pilot and eventually assume command responsibility for aircraft carrying passengers or freight. The program is planned to enable the student to acquire competency and knowledge in such fields as: aircraft structure, behavior, and operation, and controls; radio communications as applied to aircraft; meteorology; navigation; airways safety and traffic regulations; and other aspects of a pilot's duties and responsibilities. The student will be expected to become conversant with governmental rules and regulations pertaining to piloting aircraft and will be expected to pass any tests prescribed by the Federal Aviation Agency for a Commercial Pilot's Certificate upon satisfactory completion of the designated sequence of courses.

Electromechanical Technology
A selection and intergration of specialized classroom and laboratory learning experiences in both the mechanical and electrical fields. Instruction is planned to provide preparation for responsibilities concerned with the design, development, and testing of electromechanical devices and systems such as automatic control systems and servomechanisms, including vending machines, elevator controls, missile controls, tape-control machines, and auxiliary computer equipment.

Electronic Technology
Subject matter and laboratory experiences organized to provide preparation in the specialty courses, physical science, mathematics, and general education concerned with the design, development, modification, and testing of electronic circuits, devices, and systems. Subject matter incorporates solid state and microminiaturization devices and representative systems such as microwave systems, computers, and controls.

Environmental-Control Technology
Classroom and laboratory experiences designed to develop in the pupil knowledge and understanding concerned with the scientific principles and basic mathematics dealing with the control of temperature and quality of aid, and the design, testing, installation, and development of heating and cooling systems.

Fire and Fire Safety Technology
A planned sequence of classroom instruction (including the appropriate sciences such as chemistry) and practical experiences designed to prepare the student to function as a fire control and fire safety specialist. The program is planned to enable the student to acquire competency and knowledge in one or more of such diverse fields as: structural design and materials; meteorological factors impinging upon fire situations; fire fighting and control equipment, as to its proper usage based upon an understanding of the chemistry of combustion and the most modern techniques for coping with fires; the handling of hazardous materials (such as petroleum products, and other volatile, explosive, or corrosive materials; either routinely or in an accident situation; the inspection of public and private property to evaluate fire and fire safety conditions, recommendations for correction of unsafe conditions; advising local governments, private industries, and individual citizens concerning the prevention of accidents and fires; conducting educational activities, through regular school programs or special campaigns to promote fire safety and the prevention of accidents and fires.

Forestry Technology
A sequence of classroom and laboratory experiences including appropriate physical and biological sciences, designed to prepare the student to function as a technical specialist in the utilization of timber resources. The program is planned to enable the student to acquire competency in one or more of such areas as: harvesting of timber, surveying of timber lands, draws topographical maps, selects trees for cutting, and plans the transportation of logs to mills or loading sites, conducting or assisting in research involving the preparation of wood for commercial use, and the preservation and utilization of wood and its by-products; developing, improving, or determining methods of handling, curing, shaping, and treating wood in the course of manufacturing wooden products; investigating and assisting in setting up chemical or mechanical processes for converting wood into various commodities and testing wood for such properties as strength, elasticity, and endurance, and recommending proper utilization.

Health-Related Technology
That part of the health occupations field which requires the application of scientific knowledge and methods combined with technical skills in support of the health occupations. Persons prepared in this technology are a part of the health team which includes the skilled worker, the technician, and the dentist, medical doctor, and other professionals.

Industrial Technology
A program of instruction designed to develop knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills, combined with appropriate laboratory experiences which will prepare the pupil to be supportive to the industrial engineer in production and planning. The subject matter emphasizes the design and installation of integrated systems of materials, machinery, equipment, and personnel.

Mechanical Technology
A program of instruction designed to develop knowledge and understanding concerning scientific principles, mathematical concepts, and communicative skills combined with appropriate laboratory experiences which will prepare a pupil to become supportive to the mechanical engineer.

Metallurgical Technology
An organization of subject matter and laboratory experiences including specialty courses, physical sciences, mathematics, and general education concerned with the production, research, and/or quality control of metals. The instructional program is designed to prepare pupils for performing duties in such areas as: conducting tests on the properties of metals, pilot and production plant design and development, the development, operation, and alteration of test procedures and equipment; and the collection and analysis of data and preparation of comprehensive and detailed reports in support of professional personnel in the metallurgical field.

Nuclear Technology
A combination of subject matter and laboratory experiences designed for the study of scientific principles, mathematical concepts, and communicative and technical skills which when combined with apporpriate laboratory situations, prepare the pupil to be supportive to professionals engaged in developing manufacturing, testing, research maintaining, storing, and handling materials in the nuclear science and energy field. The subject matter emphasizes nuclear physics, radio-isotopes, chemistry, electronics, nuclear instrumentation, and safety procedures.

Petroleum Technology
A planned program of classroom and laboratory experiences which include mathematics, chemistry, physics, petrology, sedimentation, and geophysics as applied to the recovery and use of oil and gas. Instruction leads to preparation for: oil field exploration; supervision of rig construction drilling, oil field services, crude petroleum production, and petroleum refining; and work in direct support of the engineers and geologists in the oil industry.

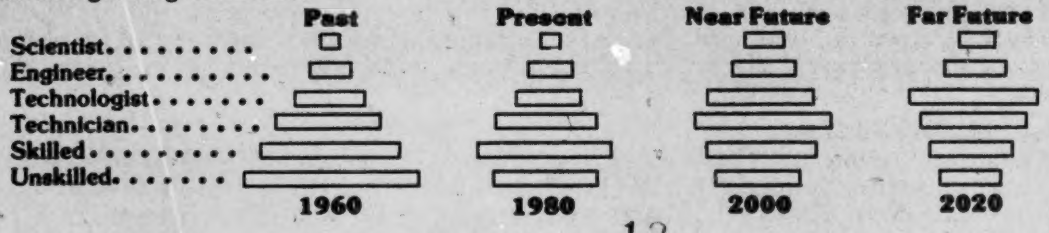
Police (Law Enforcement and Corrections) Science Technology
A planned sequence of classroom instruction and laboratory experiences designed to prepare a student to function as one or more of the following: (1) a generalist in any law enforcement agency concerned with patrol and investigative activities, traffic control, initial contact with the public such as obtaining information, preparing reports, and testifying in court; (2) an evidence technician operating in a crime laboratory or mobile unit concerned with the collection, preparation, and transportation of physical evidence--including the use of skills in photography and report writing and (3) a technician--primarily concerned with delinquency or crime prevention--who may be employed by a police agency, juvenile court, or correctional institution to (a) carry out responsibilities which may include investigation and referral of dependent-neglected children as well as delinquents and youthful offenders, (b) supervise persons on probation, or (c) provide rehabilitative services to offenders.

Roadway Technology
Specialized learning experiences designed to prepare personnel for duties such as surveying, designing routes, laying out roadways, testing materials, acquiring land and preparing plans and specifications for the construction of highways, railroads, and airports.

Sanitation Technology
Specialized learning experiences, including the study of biological sciences, planned for preparing personnel who will be involved in the design constrution, and operation of water systems, sewage disposal systems, and pollution systems.

Structural Technology
Specialized learning experiences concerned with the preparation of personnel for duties such as structural detailing and design testing, building construction supervision, estimating, and specification writing.

The trend in levels of employment are away from unskilled to a technician bulge in the 1980's and a technologist bulge in the 2000's.



Look to Your Future as a Technician

As you attempt to fit yourself into this continuum of craftsman, technician, technologist, engineer, and scientist, give careful consideration to where the future may find you. Obviously, technology has come a long way. Seemingly, technology knows no boundaries over the long term.

When you attempt to formulate plans for your career, give pause to consider what the world will probably be like over the span of your work life.

You may initially plan to take course work and training to become qualified to do a specific job. Once on the job, you may return on a part-time basis to complete other degree requirements. My suggestion is that you look to your future. Plan a program of study which eventually will lead to the completion of a degree program. Other degree programs can come later. Yet the evolving sophistication of the job market might be reason enough for everyone to work toward the completion of a degree program. Certainly another earned credential can only be helpful. Any documented evidence demonstrating that you have made the effort necessary to enhance your capabilities will be an asset. So make your long-range plans to include an associate degree and eventually a bachelor degree. (See page 92 "The Value of a College Education")

Helpful Publications to Consult

Suggested reading for young men and women who are interested in engineering technology. These items are available by mail:

EC-13: After High School - What? Brief summary of nature of work, qualifications, and education for engineers, engineering technologists, and engineering technicians; explains how engineering differs from a career in science. 5 pages. 15¢

EC-15: Meeting College Costs: A Guide for Students and Parents. This booklet offers general guidelines on computing college expenses, student aid programs, and the way in which colleges determine financial need. (Made availabel to ECPD by College Entrance Examination Board.) 8 pages, no charge.

EC-16: Directory of Engineering Guidance Materials and Programs. Information about the nature and scope of opportunities. 8 pages. 15¢

EC-21: Accredited Programs Leading to Degrees in Engineering Technology in the United States. Lists all accredited programs by institution. 25¢

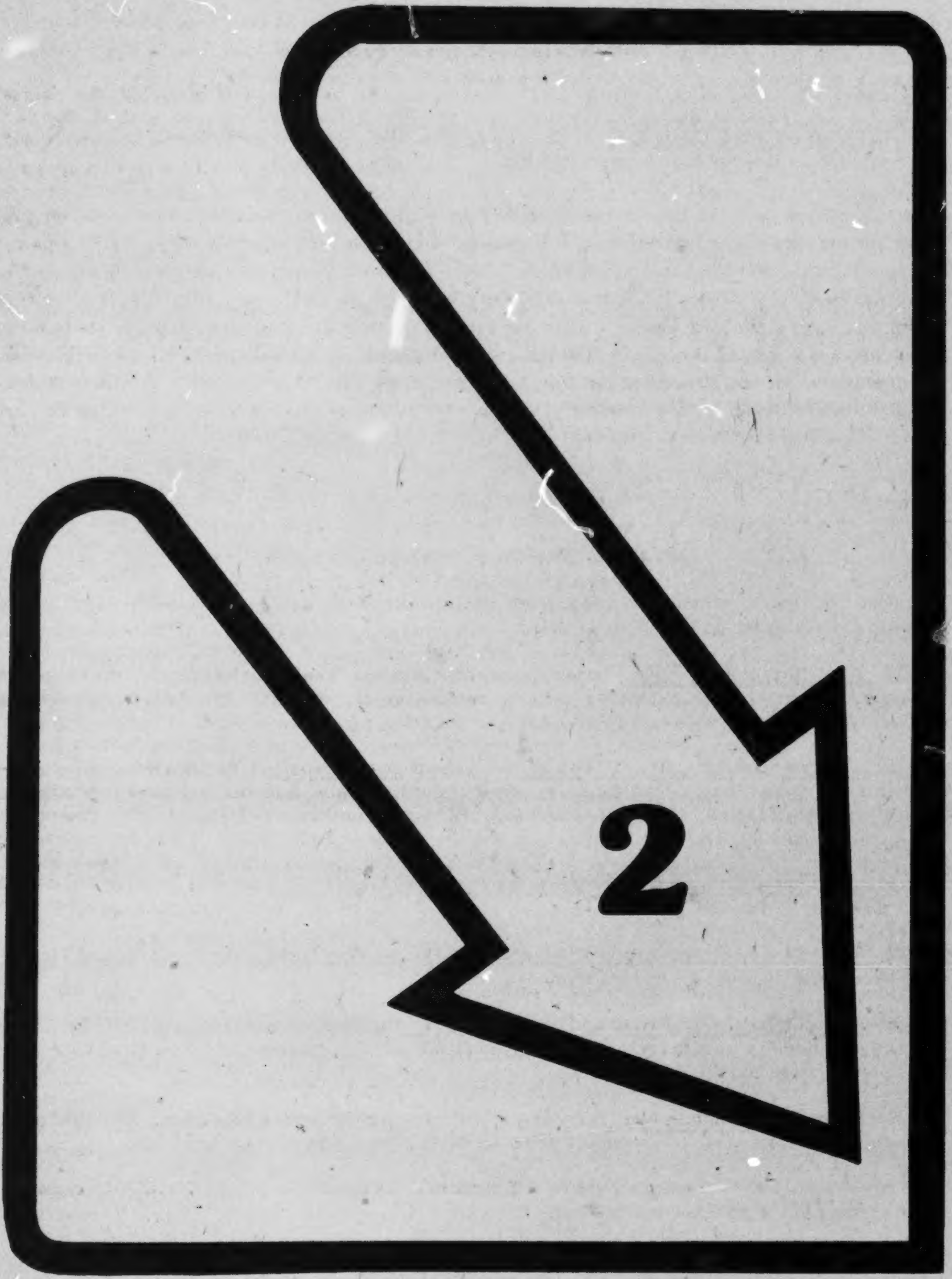
EC-66: Dialogue Between a Father and his 16 year-old Son. By S. Reed Warren, Jr. The transcript of a conversation in which the son explains to the father what an engineering education is all about; illustrated. 5 page foldout. 10¢

EC-71: Minorities in Engineering. A guidance brochure directed at the minorities; describes what engineering is all about including opportunities for professional growth. 12 pages. 25¢

EC-72: Womengineer. A comprehensive description of the roles of women in engineering and the need for more in the profession; illustrated. 18 pages. 25¢

EC-73: Aids in Choosing Engineering or Engineering Technology as a Career. A self-administered questionnaire about the aptitude, interest, and determination needed to pursue a career as an engineer or an engineering technologist. 25¢

Note: All orders are to be made to Engineers' Council for Professional Development. Publications Office, 345 East 47th Street, New York, N. Y. 10017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CHAPTER TWO

Select A Career Field

Becoming interested in your future career should be easy to do. You probably like yourself. And you would like to do for yourself the best possible things. So the next natural step is for you to get interested enough in yourself to investigate what your future might be like with various careers. Certainly you can spare a few moments to contemplate what you hope for in a career. If you don't have the time, rather than sign up for a 3 credit class you're not sure about, you may want to take a course in yourself some term. Schedule three hours under a tree each week and concentrate. If you need direction for this experience, sign up for a yoga course.

To get started thinking about careers, just for fun, ask the next ten people you see how they decided to get into the career they are in. You will be amazed at the variety of responses. In fact, you probably have a job now, yourself. Honestly, think back to why you got into it. "It just happened," you may say. Or you may have planned somewhat. Yet, most people seem to "fall into" a career area. There might be a better approach.

Rate Your Job Preferences

Before you can settle on a career field, you need to begin to define just the sort of job you are seeking. What are the working conditions that would please you the most? And of these conditions what is relatively more and less important? Now, kick off your shoes. Prop your feet up. Let the blood rush to your head. Then think about each question on the next two pages. On the blank line provided at the right of each question write in the words that you choose from the possible underlined answers in the question. After answering these items, you will be better able to make a comparison between apparently different sorts of work. A comparison chart and instructions have been drawn up for you. (page 21). Use the chart as you please to standardize the rating you give to various jobs. You may want to make several copies of the comparison sheet to be used over and again. Or you can design your own sheet. The more involved you are the better. But for now, back to your job preferences. Answer each question with the answer you like best. Or write in a better one if you can. For example:

Do you like may different things daily to happen or do you prefer only a few different things daily?	MANY DIFFERENT THINGS DAILY
Do you prefer a job that is investigative or one that holds no surprises?	INVESTIGATIVE
Will you expect to be home evenings or do you prefer an occasional overnight business trip?	HOME EVENINGS
Do you want to be physically involved or mentally involved more?	PHYSICALLY INVOLVED
Do you consider your talents to more as a self starter or as a good follower?	GOOD FOLLOWER
Do you mind working where people smoke or do you prefer a no-smoking place?	NO-SMOKING PLACE
Do you want to be responsible for others or would you rather not be responsible for others?	NOT RESPONSIBLE FOR OTHERS

Use pencil in case you have to erase. You may find yourself doing a lot of that. Now turn the page and have fun. You may even have a friend help.

Job Preferences

Do you prefer to work a straight day shift schedule or does it seem good to be on a rotating shift schedule? ______________________________

Do you expect to have to work weekends or do you prefer weekends off? ______________________________

Do you prefer to work in an office, in a lab, in a shop, in a factory, or ______________________________? ______________________________

Would you rather work indoors or work out-of-doors? ______________________________

Do you expect that as a fact of your job you could get dirty or do want to stay clean? ______________________________

Shall you move from job to job or go to work always at the same place? ______________________________

Do you prefer to be creative at work or do you like to follow existing procedure? ______________________________

Do you consider yourself best at your job, best mornings, best afternoons, or best evenings? ______________________________

Do you prefer a 40 hour week or would you consider more than a 40 hour work week? ______________________________

Does the notion of using a foreign language interest you or would you prefer to use no foreign language? ______________________________

Do you want to wear a uniform or would you rather wear no uniform? ______________________________

Do you like many different things daily to happen or do you prefer only a few different things daily? ______________________________

Do you prefer a job that is investigative or one that holds no surprises? ______________________________

Will you expect to be home evenings or do you prefer an occasional overnight business trip? ______________________________

Do you want to be physically involved or mentally involved more? ______________________________

Do you consider your talents to more as a self starter or as a good follower? ______________________________

Do you mind working where people smoke or do you prefer a no-smoking place? ______________________________

Do you want to be responsible for others or would you rather not be responsible for others? ______________________________

Could you work with numbers or work with things? ______________________________

Do you want to wear a suit or would working in sport clothes be O.K.? ______________________________

Do you expect to do some public speaking or would you rather do no public speaking? ______________________________

Will you be able to work on Saturdays or can you not work on Saturdays?

Do you value prestige more or do you value satisfaction more?

Do you need compliments from workers or can you work with little praise?

Do you expect immediate feedback or do you not need immediate feedback?

Do you expect to become a union member or would you rather not work in a union?

Do you want to work closely with management or would you rather avoid management people?

Do you expect to be skilled trades, labor, supervision, or management?

Do you expect to have one supervisor or it would be alright to have many supervisors?

Do you mind the idea to punch a time clock or would you rather have no time clock to punch?

Do you want to work with the same fellow workers daily or would you rather occasionally work with different people?

Do you want to work on land, on sea, or in the air?

Do you prefer to work on short term projects or on long term projects?

Do you work best with established work deadlines or would you rather have no work deadlines?

Does a job with yearly short-term layoff sound better than work the year round?

Do you need two weeks vacation, a month vacation, or six weeks vacation?

Do you want to work in a big city or in a small town or________________________________?

Do you want to work under pressure or do you not want to work under pressure?

Do you expect your job to involve foreign travel or do you expect no foreign travel?

Do you want to live/work near mountains, near lakes, near rivers, near ocean?

Do you want to work in the United States or would you consider a job in a foreign city?

Would you be willing to work outside in the winter or would you rather not work outside in winter?

Do you expect a rapid increase in wages or would a steady slow wage increase be better?

Comparison Chart

The chart at the right can help you to see how one job compares with another. In the spaces provided, first enter the job preference items which you wrote out on the lines to the right of the questions on pages 18 and 19 that are important to you. Do not include items which don't matter to you. Write in other preference items which you really care about in a job that are not a part of the stock answers. Then make several copies of the comparison chart. On one copy write in a job title and level you are considering. Then write a number in the box to the right of each job preference item to reflect if you expect to be able to realize your preference item in the job on the top of the sheet. Here are a few suggestions:

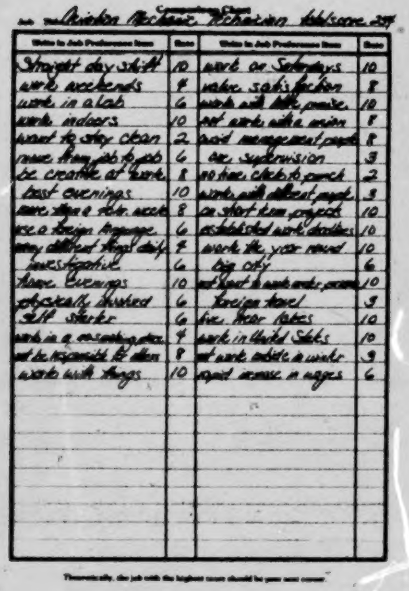
- Enter a 10 if you are sure you will realize your preference item.
- Enter a 5 if you are not sure if you will realize the item.
- Enter a 0 if you do not expect to realize the item.

(You may use other numbers in between. Set up a scale and be consistent.) When you have a number for each job preference item, add up all the numbers on the sheet. Take another sheet and enter another job title at the top. Go through the same procedure. When you have made several evaluations, you can begin to compare seemingly different jobs.

The job with the highest score should be the job you shoot for. If you don't agree with the ranking and the way the numbers turn out, then you must realize that there are other job preference items which must be important to you that are not on the chart. So add additional preference items until the numbers work out. You may even have to add in negative numbers to reflect job non-preference items that mean a lot to you.

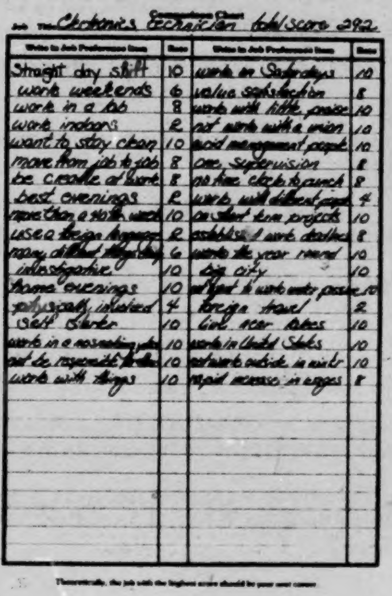
When you are finished with your ranking, then turn over a copy of your worksheet with your job preference items written in without the numbers to a person who has the job written on the top of the sheet today. Ask the worker to use your scale of numbers to enter values based on your scale. You may be surprised with the results. Alter the chart or method to suit yourself. Or make up your own chart. Or only look at the preference items without going through the numbers business. It doesn't matter what you finally do with the chart. The important thing is the fact that you are giving attention to some of the most important items necessary to consider when making a career selection. Neat-o, eh? And even fun.

Samples of Comparison Charts Completed



Aviation Mechanic Technician total score [illegible]

Straight day shift	10	work on Saturdays	10
work weekends	4	value satisfaction	8
work in a lab	6	work with little praise	10
work indoors	10	not work with a union	8
want to stay clean	2	avoid management people	8
move from job to job	6	one supervision	3
be creative at work	8	no time clock to punch	2
best evenings	10	work with different people	3
more than a 40 hr. week	8	on short term projects	10
use a foreign language	6	established work deadlines	10
many different things daily	4	work the year round	10
investigative	6	big city	6
home evenings	10	not have to work under pressure	10
physically involved	6	foreign travel	3
Self starter	6	live near lakes	10
work in a nonsmoking place	4	work in United States	10
not be responsible for others	8	not work outside in winter	3
work with things	10	rapid increase in wages	6



Electronics Technician total score 292

Straight day shift	10	work on Saturdays	10
work weekends	6	value satisfaction	8
work in a lab	8	work with little praise	10
work indoors	2	not work with a union	10
want to stay clean	10	avoid management people	10
move from job to job	8	one supervision	8
be creative at work	8	no time clock to punch	8
best evenings	2	work with different people	4
more than a 40 hr. week	10	on short term projects	10
use a foreign language	2	established work deadlines	8
many different things daily	6	work the year round	10
investigative	10	big city	10
home evenings	10	not have to work under pressure	10
physically involved	4	foreign travel	2
Self starter	10	live near lakes	10
work in a nonsmoking place	10	work in United States	10
not be responsible for others	10	not work outside in winter	10
work with things	10	rapid increase in wages	8

Comparison Chart

Job Title____Total Score __________

Write in Job Preference Item	Rate	Write in Job Preference Item	Rate

Theoretically, the job with the highest score should be your next career.

Professional Group Addresses

Write for information about occupations from:

Write to the organization(s) most interesting to you for more information.

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS, INC.
1290 Avenue of the Americas, New York, New York 10019

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
345 East 47th Street, New York, New York 10017

AMERICAN INSTITUTE OF INDUSTRIAL ENGINEERS, INC.
25 Technology Park, Atlanta, Norcross, Georgia 30071

AMERICAN INSTITUTE OF MINING, METALLURGICAL AND PETROLEUM ENGINEERS
345 East 47th Street, New York, New York 10017

AMERICAN NUCLEAR SOCIETY
244 East Ogden Avenue, Hinsdale, Illinois 60521

THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS
2950 Niles Road, St. Joseph, Michigan 49085

AMERICAN SOCIETY OF CIVIL ENGINEERS
345 East 47th Street, New York, New York 10017

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
345 East 47th Street, New York, New York 10017

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.
345 East 47th Street, New York, New York 10017

SOCIETY OF AUTOMOTIVE ENGINEERS
400 Commonwealth Drive, Warrendale, Pennsylvania 15096

NATIONAL INSTITUTE OF CERAMIC ENGINEERS
65 Ceramic Drive, Columbus, Ohio 43214

SOCIETY OF MANUFACTURING ENGINEERS
20501 Ford Road, Dearborn, Michigan 48128

AMERICAN CHEMICAL SOCIETY
1155 Sixteenth Street,N.W., Washington, D.C. 20036

AMERICAN WATER WORKS ASSOCIATION, INC.
2 Park Avenue, New York, New York 10016

INSTITUTE OF ENVIRONMENTAL SCIENCES
940 East Northwest Highway, Mt. Prospect, Illinois 60056

INSTRUMENT SOCIETY OF AMERICA
400 Stanwix Street, Pittsburgh, Pennsylvania 15222

SOCIETY OF PLASTICS ENGINEERS, INC.
656 West Putnam Avenue, Greenwich, Connecticut 06830

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY
One Dunwoody Park, Atlanta, Georgia 30341

A Few Added Considerations

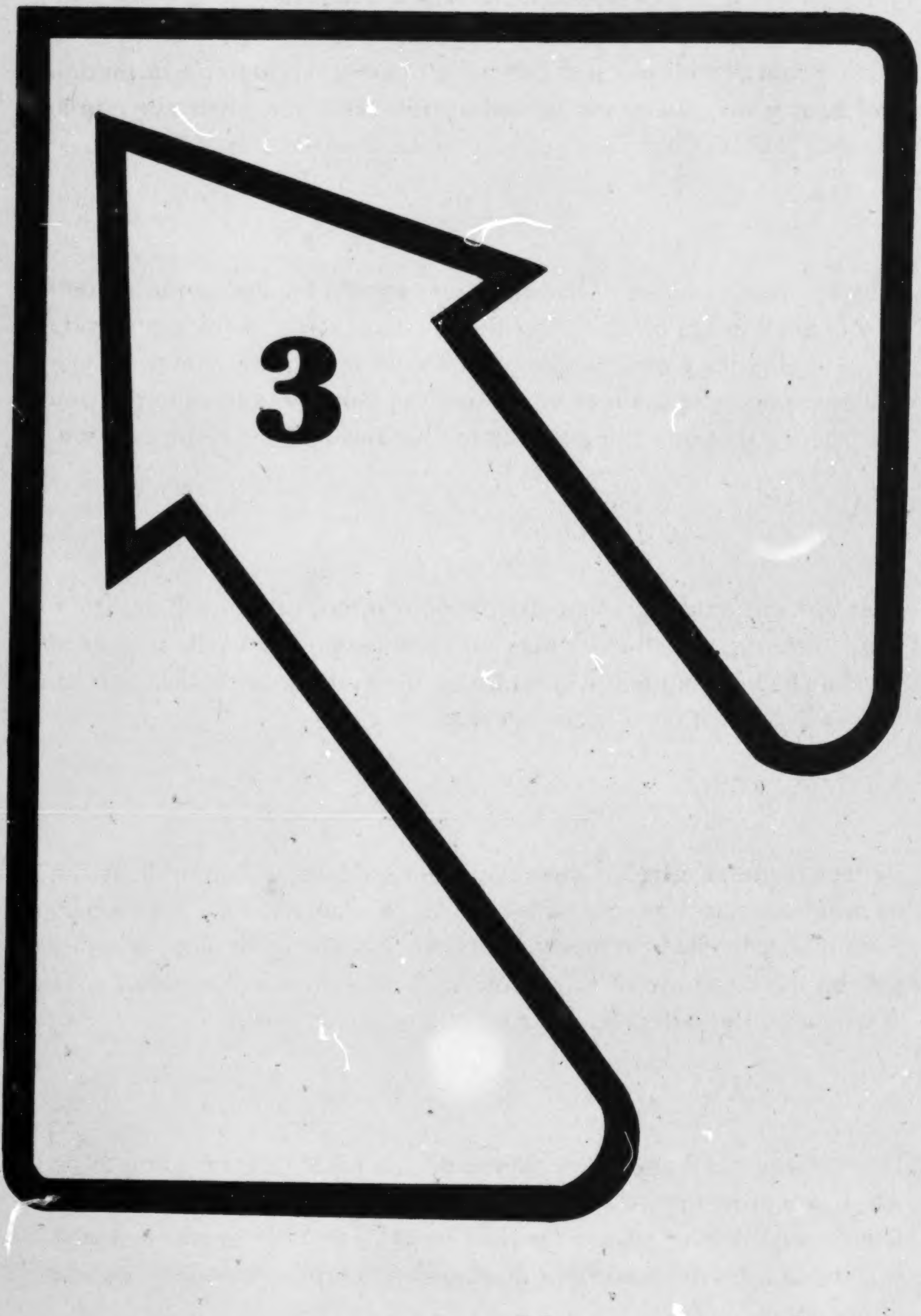
Realize that you alone must select your career. Certainly information and help from others will be important. But you must eventually decide, "This is what I am going to do for the next step."

You do have a choice. Obviously you should be somewhat guided by the availability of jobs. But don't pattern your selection merely on availability. Every career area has infrequent openings. Even the next person to set foot on the moon! But are you willing to pay the price? Are you willing to wait in readiness? That is the essence.

Fear not. Should you even change your mind, others will embrace you. After all, who hasn't messed up at least once in the matter of career choice? No one will fault you for making an honest mistake. You can make other choices later.

Believe in your desires. Obviously you would not intentionally make an improper selection. So have confidence. And anyway, the decision you make will only be temporary at best. For the technology of today will be in museums of tomorrow with you as a ticket taker unless you constantly re-decide, re-train, and re-fine your skills.

Don't be upset if you never finally decide what you're going to do when you grow up. Always assume that your current career is only a way of expressing yourself in the temperament of the moment with the style of the times. When the moment or time changes, you will change too.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CHAPTER THREE

Check Out the Career

After considering your job preference list, you have made a tentative selection of a career that seems to interest you. Next you must investigate that career. Here is a prioritized list of contacts to put your selection to the real test.

First, Employers

Go to a representative employer of the sort of worker that you want to be. And then fill out another set of numbers based on how an employer feels about the job characteristics. They may be pleased to take a few moments to work with you to help you find your job goals relative to your preference items.

A contact with an employer could change your entire outlook about an occupation. Yet this contact is usually made last: The day you interview for a job. You must admit that the very best person to ask about the requirements for getting a job is the person who ultimately may be your employer. Who else will pay for the skills you master? So begin with a prospective or representative employer for the job choice you have in mind. Let that employer tell you which skills are necessary for the job today. Also, listen closely when he or she projects for you on new job skills that may be essential when you are ready to apply for a job. Through the comments of a person like this, you will have the best information on which to base a decision. If you are able to talk to more than one employer, fantastic. Don't be reluctant! Do it! That's where the action is. Career counselors may have names of people in your local business community who are willing to spend a few moments with you. An employer is the person who will give you the chance to prove you have the necessary job skills. Why not pay closest attention to what an employer suggests?

Questions to Ask a Representative or Prospective Employer

What seem to be the needs for more workers in the near future?
What skills are essential and at what skill level?
What sorts of training would be helpful but not required?
Would you recommend that a person like me go into the business?
How much up-grading will I need to keep current in the occupation?
Are the chances for advancement typically good?
How do the salary levels seem to be now? High or low?
What trends do you see in the business / industry?
What would be the normal next step up from this job?
How long usually does it take for a person to move up?
What other related occupations do you feel have excellent futures?

Second, Employees

People who already have a job doing what you want to do may be an excellent source for "inside" information. After all, any information about the job will be helpful. With the help of the person now working at the job, run down your preference list. Ask the worker if these preference items of yours will fit the job. The responses might surprise you. And if you can, ask even more that one person so your results will be more valid. Take notes also on what this worker says. Record the skills they see as useful in the future. Although an employer is the person who has information to help you get a job, a person who is currently doing the work to which you aspire will have information that will help you keep the job.

Questions to Ask a Person Who Has Your Job Today

How long did it take you to get good at your job?
What is the most useful information you know?
What seems to be the trend in your job?
If you had a choice, would you change vocations? To what?
Do you know of training programs for people like me?
Where and how often do you go to up-grade your skills?
If you had time, what other things would be useful to know?
What are titles of books that you use in your work?
Who are the leading authors in your field?
What are the chances for new workers like me to get a job?
How would you get into the business again?
Do you have tools or books that you want to sell?

Third, Family and Friends

After talking with an employer and employees about job possibilities, the time is right to ask your family and friends how they feel. Without the support of "your people," getting through a program of study or even one course can be impossible. Ask them if they can see you in this chosen occupation. Listen closely. They want the best for you.

Questions to Ask Family and Friends

Do you know anyone who has ever worked as a(n)____________________?
Where can I set up a lab bench at home to practice my skills?
Where can I set up a study area so my books and papers will not be lost?
Will you buy me a bookcase?
Do you have magazines or books about______________that you can give me?
Have you heard of where I might buy a used file cabinet?
Will you read over my report before I turn it in?
When can you help me drill on facts for my courses?
Do you think I have what it takes to become a(n)__________________?
Are you willing not to have me around as often while I'm seeking the training?
Do you think I am aiming too high or too low?
As you meet people, will you ask them for information about__________________?

Fourth, Faculty

Consult the faculty to match job requirements as stipulated by employers and current employees in "your future job" with existing course offerings. Faculty are at their best when advising you about courses to take to meet job skill needs. They also may be able to offer names of contacts in the business.

Questions to Ask Faculty

Do you have "inside" contacts that I might consult?

What do you see as the future for____________________________?

How important will math be and to what degree of difficulty?

What is you method of reserving office hour appointments?

Have any of your previous students become______________________________?

Do you know of schools with similar programs that are near-by?

Where might this course work transfer to a higher level degree program?

Fifth, Counselors

Another group of people who can help in setting up a program of study are college counselors. Once you have determined which course to take, a counselor can match you up with the system. Let this person help you fit into the system available. But don't expect counselors to tell you which courses to take or what to do for your life's work. However, they may have contacts in the community for you to also discuss your career plan. Don't leave out this important group.

Questions to Ask a Counselor

Do you know of an employer who would discuss my plans with me?

How can I resolve the problem of poor grades which I still have on my record?

Which credits will normally transfer to this school?

Can you direct me to the faculty advisor for my area?

Do you expect a person with my background will have difficulty?

What services are available at your college to improve my reading?

Have you found that many students are interested in this program?

Sixth, Other Students

Other students may have the newest rumor free for the asking. Don't put them down. They are operating under the same system as you are. And for all intent and purpose you are all on the same team. However, remember to confirm all facts with faculty or administration before making graduation plans on rumor.

Questions to Ask Other Students

Who seems to be the best lab instructor for you?

Who seems to be the best theory instructor?

Who is usually available to help after class?

Who can you go to with a problem?

Where are the library books kept?

When will the next test be given?

Where is the pencil sharpener?

Have you heard of any part-time jobs in this field lately?

Do you have any books to sell?

Will you review before the exam with me?

Do you know of other schools where a person might transfer?

The Michigan Occupational Information System (MOIS)

Are you looking for information to help you make an important decision about your education or career? Would you like to learn about jobs which are matched to your talents and interests? Whatever your career needs, the MOIS program is designed to serve you. Sponsored jointly by the U.S. Department of Labor and the Michigan Department of Education, MOIS is a state-wide information storage and retrieval system which provides a range of descriptive information about 200 different occupations in Michigan.

Microfiche System

The MOIS Microfiche System allows wide distribution of information to students, counselors, teachers, librarians, and social service agencies. The system provides easy-to-read information on careers, schools, and training programs. It features a deck of sixty-two fiche, each of which describes seven MOIS occupations. The fiche are color-coded for easy identification and are illustrated with drawings, tables, diagrams, and maps. A user's guide is available to aid in career exploration. The advantages of the MOIS microfiche system include:

★ Current national, state, and regional data
★ Wages and earnings
★ National employment and outlook
★ State employment and outlook
★ Regional employment
★ Regional projected job openings
★ Related post-secondary program and schools in Michigan
★ Related apprenticeship and military training programs
★ Related school subjects
★ Job sample questions and answers

Computer System

The MOIS Computer System provides users with information on careers in education, matched to their expressed interests.

Drawing from the MOIS data bank, the Computer System employs both "Direct" and "Structured" searches for specific occupations and educational training programs. The "Direct Search" strategy provides information matched to an individual's occupational and/or educational preferences. The "Structured Search" strategy provides information such as interests, education, physical strengths, preferred working conditions, and temperaments. The advantages of the MOIS Computer System include:

★ Current national, state, and regional data
★ Simple, easy to follow instructions
★ Logical flow of questions
★ User controlled operation
★ Adaptation to a wide variety of computer terminals and
  teletype-compatible devices
★ Rapid retrieval of information

Hard Copy

To supplement the other information delivery systems, MOIS delivers information via hardcopy to selected agencies. The hardcopy system provides user agencies with a printed copy of information pertinent to any particular MOIS career brief in question. Hardcopy is only available to selected agencies. Contact MOIS or your local school or agency to determine whether hardcopy is available.

Benefits of MOIS

Information on occupations and related education and training developed from local, state, and national sources is centrally filed in the six MOIS data bases.

Information is attractively packaged and presented in clearly understandable language.

Information is constantly updated to remain accurate.

Information is accessible through a wide variety of systems and in a variety of multi-media formats.

The MOIS Data Bank Contains the Following Six Files of Information

Occupational File: Contains 200 MOIS occupational titles reflecting 80% of the employment in Michigan. Information topics include:

- ★ Nature of the Job
- ★ Working Conditions
- ★ Economic and Advancement Opportunities
- ★ Requirements
- ★ Job Outlook
- ★ Sources of Additional Information

Program File: Contains information on 102 post-secondary training programs in Michigan. The purpose, core courses, prerequisites, schools offering, length, and cost of each program are listed.

School File: Contains information on two-year and four-year colleges, universities, and private vocational schools in Michigan. 272 schools are listed. Type of school, size, admission dates, financial aid data, programs, and entrance requirements.

Apprenticeship File: Contains 40 apprenticeship trade programs in Michigan related to the 200 MOIS occupations. Information on content and length of programs is included.

Military File: Identifies 76 Military Occupation Specialties (MOS) which have civilian counterparts in the 200 MOIS occupations.

School Subject File: Contains 95 school subjects related to the 200 MOIS occupations.

FOR ADDITIONAL INFORMATION IN MICHIGAN CONTACT:

Michigan Occupational Information System
Vocational-Technical Education Service
P. O. Box 30009
Lansing, Michigan 48909

FOR ADDITIONAL INFORMATION IN OTHER STATES CONTACT:

State of Alabama
Occupational Information System
First Alabama Bank Building
901 Adams Avenue
Montgomery, Alabama 36130

Colorado Career Information System
University of Colorado
Willard Administrative Center, Room 7
Boulder, Colorado 80302

Minnesota Occupational Informational System
670 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Massachusetts Occupational Information
System, Inc.
Wellesley Office Park
60 William Street
Wellesley Hills, Massachusetts 02181

Ohio Career Information System
309 South Fourth Street
Columbus, Ohio 43215

Washington Occupational Information System
Evergreen State College
Olympia, Washington 98505

Wisconsin Occupational Information System
Center for Studies in Vocational and
Technical Education
321 Education Building
Madison, Wisconsin 53706

Occupational Outlook Handbook

The choice of a career is one of the most difficult decisions in a person's life. An increasingly complex and uncertain job market adds to the difficulty. The all important question is the availability of jobs, aside from the many considerations of talent and training involved in choosing a career. The "Occupational Outlook Handbook in Brief" summarizes the employment outlook to 1985 for some 275 occupations selected from the 1976-77 edition of the Occupational Outlook Handbook.

Discussions of future job opportunities for the occupations listed here are based on estimates of projected growth in employment, replacement needs because of deaths and retirements, and, where available, information on the supply of workers. The employment projections are developed from statistical data on population, employment by industry and occupation, productivity, consumer spending, technological innovation, and other factors that affect employment growth.

Employment growth refers only to the estimated number of new workers needed beyond the number of persons required to replace those lost to deaths and retirements. Compared with replacement needs, employment growth is expected to account for only a little more that 30 percent of all job openings.

Employment growth is an indicator of vitality in an occupation and is measured in relation to the average growth for the entire economy; much faster than average; faster than average; about as fast as the average; slower than average; little change; or decline. Compare two occupations with an approximately equal number of workers. The one growing faster will usually have more job openings.

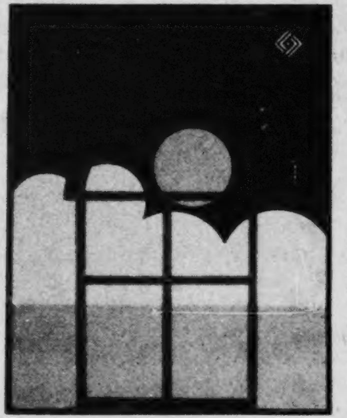
A large occupation with a slow rate of growth, on the other hand, may offer may openings because of deaths and retirements than a smaller, faster growing occupation. For example, employment of anthropologists is projected to increase from 1974 to 1985 by over 40 percent--from 3,800 to 5,400. Estimated annual openings will be 250--150 owing to growth and 100 from deaths and retirements. In contrast, employment of barbers is expected to grow only about 4 percent--from 130,000 to 135,000. However, only 450 of the estimated annual openings of 5,550 will be due to growth.

Transfers from one occupation to another are not taken into account when calculating replacement needs because of a dearth of information. However, these transfers account for a significant number of job openings in most occupations. Therefore, estimates of average annual openings may be smaller than the actual number of jobs available.

Supply estimates are given for occupations in which it is possible to see trends based on the nubmer of persons pursuing the necessary training and education to enter the profession. This usually is limited to the professional and technical fields. Supply-demand relationships are characterized by the degree of competition for expected job openings--excellent, very good, good, or favorable, competition, or keen competition. If the statement indicates excellent employment opportunities (as in the case of heophysicists), this means that the demand for qualified applicants is expected to exceed greatly the supply. On the other hand, if the supply of qualified applicants is likely to exceed greatly the demand (as in the case of secondary school teachers), the statement would indicate keen competition.

Reprinted from Occupational Outlook Handbook 1976-77 Edition.

Another Book to Consult: **Occupational Outlook Handbook**



**Published by: U.S. Government
Printing Office, Washington, D.C.**

Purchase from:

**Bureau of Labor Statistics
9th Floor, Federal Office Building
230 South Dearborn
Chicago, Illinois 60604**

Available at most libraries, this handbook can be used as a shopping guide to a career. Not only will a description of the actual working conditions be given, but the projected future for that and related occupations is included. To develop proper respect for the authenticity my suggestion is to read about a job that you already know about. Then you will be able to guage just how valid the comments in the outlook really are.

Consider Part-Time Work Concurrently

An excellent way to become most rapidly in tune with any given occupation is to actually work at it. What an understatement! Yet many people fail to realize this fact. If you will spend time in part-time work even in a related field to your subject are, you will be able to decide if a particular career is for you faster and easier.

If you depend on part-time employment income to afford to go to school, you may have to work in an unrelated area. A part-time job outside your area of interest may be necessary. But as soon as possible, seek a position that will help you become a better technician in your area of interest. The choice to make: Do you need the cash now? Or can you wait until later? Chances are you will eventually be better off is you can enhance your formal education with related on-the-job training.

The Real Secret To Success

The best kept secret about getting that special job you would love to have is to create the position yourself. Decide what you have to sell an employer. Find an employer who needs what you have to sell that is willing to pay your price. Get together.

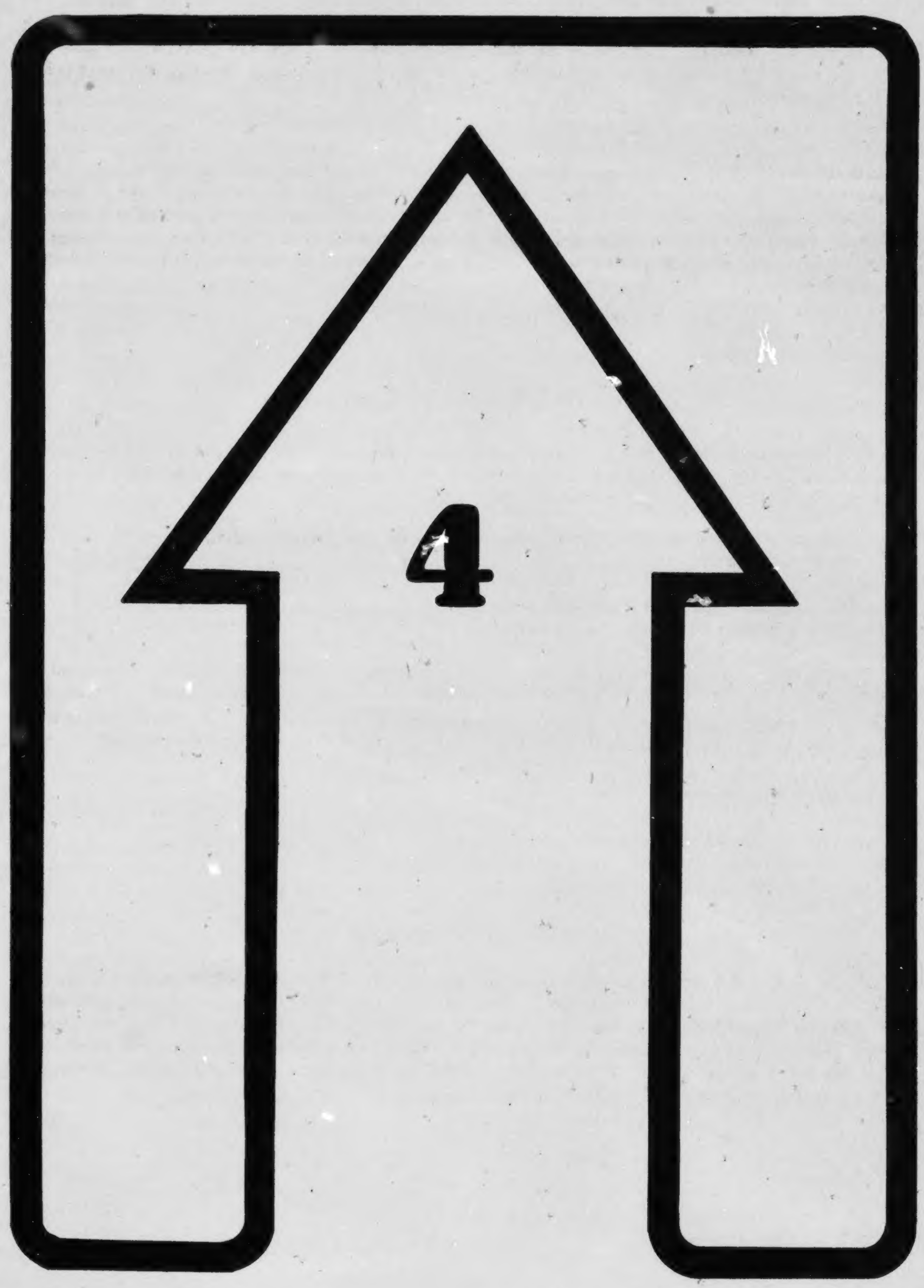
The maximums for merchandising success also apply to success in employment:

Do the same thing as others and charge less.
Do something better and charge the same.
Do something no one else has even thought of and grab the golden ring!

No mention of aptitude has been made for various occupations. Well, that is quite intentional. A person will not be interested in an occupation for which they have no aptitude. After you have fully investigated a career and honestly believe you can make it, go to it. You may have to back-up to brush-up on the basics. But you will make it as long as you have been honest with yourself.

A Word of Caution

As you become more serious about selecting a career, don't be reluctant to make a selection. Evaluate your situation. Make a decision. After all, if you are like most other people, you will be changing your career field seven times over your working life anyway. So when you prepare to select a career, don't approach the facts thinking that you will be doing the work you select for your entire life. Remember that the next career you choose will be just that: Your next career. When you aren't pleased with that career, you will want to move on.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CHAPTER FOUR

Take A Personal Inventory

Where have you been? Where are you? And, where do you want to go? Have you ever attended college and/or technical school? Have you served in the Military? Or have you served in an occupation which requires a license? Have you completed correspondence courses? Have you attended private trade schools? What work experience do you have? Has a hobby of yours allowed you to learn about some specific subject?

These experiences can result in college credits. A method to investigate each possibility for credit will follow. Once a determination of your credits has been made, you may be able to pass over basic college courses and move directly to advanced courses saving valuable time. Certainly you may take courses that contain information you already know. But so many other things need to be learned. Why waste time? Don't be modest. Claim all mastered courses. Then push on. Each term you wait to enter the job market, someone else may move into "your" job. Take as many shortcuts as your college and experience will allow.

Never Something For Nothing

As you have assessed your credits from various sources, you may be amazed at the number. But do not feel you have been given anything for nothing. Learning experiences obviously do not have to occur in a college classroom or lab to be valuable or equate to credits. In fact, colleges are now allowing college credit for other than classroom activities provided the experiences are equal to college level work. You may have many experiences that will be helpful to become a technician that will count toward a degree. But don't expect to receive transfer credits without some effort on your part. Your pursuit of the transfer of these credits will require that you do some legwork. Find out how to apply for an evaluation. You will have to ask directions. And you even will probably be given the run around a few times. So run around. And when you discover that you are being given the run around, tell someone. The system is, after all, set up to serve you. If occasionally you have to remind college faculty, staff and administrators of this fact, then do so. But also recognize when anyone has helped you by saying, "thanks".

Other Sources of Credit

Licenses issued by Federal, State, or Local Governments may be useful to certify some level of education and experience. If testing is involved and/or hours of work experience, then this time should most certainly equate to college credit.

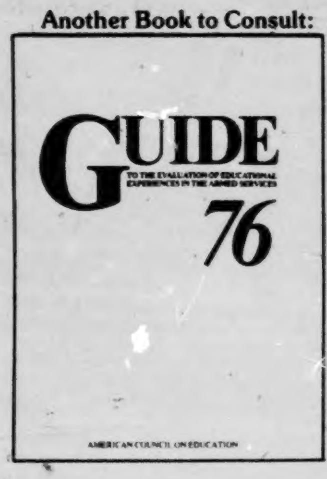
Certificates are extremely difficult to evaluate. If you expect transfer credit from certificates, you will probably need to submit a description of the training received, the length of time spent in class, and a sample of the work completed if available. In all cases, the best bet is to appear with the certificates in the presence of the evaluator so the credit evaluation can be reflective of your work.

Correspondence Schools publish transfer credit recommendations for their courses. Often, faculty advisors will have experience evaluating credit of this sort. Your best bet is to submit course descriptions, outlines, length of time spent on courses as well as a sample of your work when available.

Private Occupational Trade Schools take many forms. These schools typically offer excellent training. To insure proper course credit evaluation, you will need to present a catalog of courses, course descriptions, and any other information you have. Since many of these courses run for long periods of time, completion of entire courses may not be necessary to receive some credit. An outline will be helpful to an evaluator. Be ready to explain your knowledge.

In all cases, if you are not given transfer credits to your liking, you have the option of taking a proficiency exam for the level of credit which you feel is adequate. (see page 36.) The only difference is that transfer credit costs you nothing. Usually you must pay for proficiency exam credit.

Another Book to Consult: **Guide To The Evaluation Of Experiences In The Armed Services.** Published by: American Council on Education, One Dupont Circle, Washington, D.C. 20036 $7.50


GUIDE
TO THE EVALUATION OF EDUCATIONAL EXPERIENCES IN THE ARMED SERVICES
76
AMERICAN COUNCIL ON EDUCATION

This guide assists postsecondary institutions in giving recognition to service men and women for learning acquired through successful completion of formal courses in the military services. Entries include self-instruction, on-the-job-training and work experience.

The recommendations can also be used for advanced placement. The American Council on Education believes that economic, professional, and societal rewards are in large measure based on credentials. This guide for the first time serves to grant certified credentials to Armed Services men and women.

Use This Form When Submitting A Request For Transfer Credit For:

Licenses Certificates Correspondence Courses Private Occupational Trade Schools

Student Name____________________ Telephone ( )________________

So. Security Number____________________ Address________________

Student Number____________________ ________________

Type of credential to be evaluated (attached)____________________

When obtained____________________

How____________________

Where____________________

Length of Time____________________

Outline of Course Work

Anticipated College Credits____________________

I certify the above information is correct____________________ Date________
Signature

(attach copy of credential with other descriptive information)

- -

For Use By College Evaluator

Total Credit Approved________________

Verified by____________________ General Credit________________

Course Credit________________

COMMENTS:

Evaluated by____________________ Date________________

Telephone ( )____________________ School________________

Address____________________ Office________________

____

Credit For Work Experience

Colleges can give credit for substantial work experience toward a specific college degree. Up to 60 credits may be given for as few as 5 years of significant work experience. Needless to say, the work experience must be documented. Further, your job supervisor must in writing attest to the fact that you performed the work. Credits for work experience can be given only after you submit a detailed accounting.

Here is a suggested method to apply for work experience credit. (Before you go to all this effort, check to see if the college will give work experience credit.)

How To Apply

1. Accumulate documentation to include a statement from your previous employer relative to your length of service and specific duties. This should be on the letterhead of the organization signed by the supervisor with a telephone number for follow-up, should that be necessary.

2. Complete a copy of the form on the next page. Pay special attention to the Job Duties section. In this item you should write in a narrative fashion the exact work which you performed. Mention instruments, equipment, reference materials, tools, and any other items which you used on a regular basis. Then describe what you actually did as your work; not the total work of the organization, but what you did. This description should be as detailed as you can make it. Equate these experiences to some length of time in hours. All this will aid the college evaluator.

3. Prepare this package of information for each job you have had. (Make a copy of the form on page 37 for each different job.)

4. Submit these papers to the Registrar of the college for evaluation. An evaluator will be assigned. You may be asked to provide additional information. Be prompt and complete.

5. You can always take a proficiency exam if enough credits weren't allowed. No limit to the number of work experience credits exists except based on your work history.

Proficiency Exams (Comprehensive Exams)

If the transfer of credits has left you short, a way to get long in credits is to prove that you know the "stuff" that the courses are about. Each school has its own procedure for administering a proficiency exam. But here is a general checklist to use to prepare for a proficiency exam:

☐ Go through the administrative aspects: Paperwork.
☐ Have a faculty member assigned.
☐ Study the course outline, description, and objectives.
☐ Beg, borrow, or buy the required text. Read it too.
☐ Write out in longhand all definitions you don't know.
☐ Ask questions. Ask questions. Ask questions.
☐ Write a test from the course objectives yourself.
☐ Write answers for the test you constructed.
☐ Study your test and answers. Memorize your test and answers.
☐ Check with other students who have taken the course.
☐ Pay your money. Set the test date.
☐ Practice any manual skill you may have to demonstrate.
☐ Review.
☐ Take the exam.
☐ Pass.
☐ Add the credits to your list of successes.

Use This Form When Submitting A Request For Transfer Credit For:

Work Experience

Student Name________________________ Telephone (   )________________

Social Security Number________________ Address________________

Student Number______________________ ________________

Employer ________________________

Address ________________________

____

Supervisor________________________ Telephone (   )________________

Job title to be Evaluated____________________________Length of time (months)________

Job Duties (attach additional sheets when necessary.)

Anticipated College Credit________________

I certify the above information is correct________________________________Date________
Signature

— —

For Use By College Evaluator Total Credit Approved ________

Verified By________________________ General Credit________________

COMMENTS: Course Credit________ ________

Evaluated By________________________ Date________________

Telephone (   )________________________ School________________

Address________________________ Office ________________

____

College Level Examinations Program (CLEP)

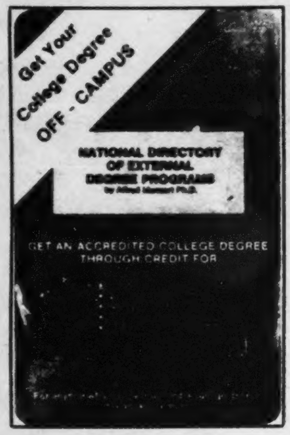
If you feel you have substantial subject knowledge gained through your own methods in such general subject area as English Composition, Humanities, Mathematics, Natural Science, Social Science and/or History you may choose merely to take a CLEP test. When the result of these objective tests are presented to the college of your choice you may receive credit. Since the amount of credit awarded for the various CLEP tests will vary depending on where and how you wish to apply the credits, a check with the Registrar of your new school is wise even before taking the exams. Be advised that the CLEP process may be difficult for because of your geographic location. For more information about CLEP write:

College Level Examinations Program
P.O. Box 1821
Princeton, NJ 08540

Term or Semester Credits

If you had two registration periods (not counting summer) then your classes were of the semester type. If you had three registration periods, then your classes were term type. A semester is usually 14 to 15 weeks in length. A term is usually 10 weeks in length. A semester credit is worth one and one-half term credits. Therefore, if you had a four semester credit math course, it would be equal to a six term credit math course. A term credit is worth two-thirds of a semester credit. Therefore, if you had a three term credit math course, it would be equal to a two semester credit math course. Make sure to also add up your own credits. A math error could mean another course to take before graduation.

Another Book to Consult: **National Directory of External Degree Programs.** By: Alfred Munzert. Published By: Hemisphere Publications, 4599 Sunset Hill Rd. Mahcias, New York 14101 $4.95


Get Your
College Degree
OFF - CAMPUS
NATIONAL DIRECTORY OF EXTERNAL DEGREE PROGRAMS
GET AN ACCREDITED COLLEGE DEGREE THROUGH CREDIT FOR

This invaluable "How To" guide by an outstanding authority can literally save you thousands of dollars and years of time as you persue your college level education. In brief, the book explains that if you have the knowledge, you will get the degree. The external degrees explained are now recognized as a way for a person to get on paper credit for life experience.

In addition to a description of existing programs, it includes detailed information on all major credit-by exam programs.

College Transfer Credits

You may have already completed college credit courses. This credit may apply to a degree. Credits are usually good forever. The few extra credits from the first school(s) you attended may apply to a degree. Each college has a policy concerning transfer credit. Read the student guide book to find the policy for each school that you are considering. Then if you seem entitled, have a transcript forwarded for evaluation. You may be suprised with the results.

A great difference exists in transfer credit from college to college. You should check with all appropriate colleges to see which gives you the best evaluation. The difference in transfer credit could mean as much as a year difference in your life.

Who Has the Record

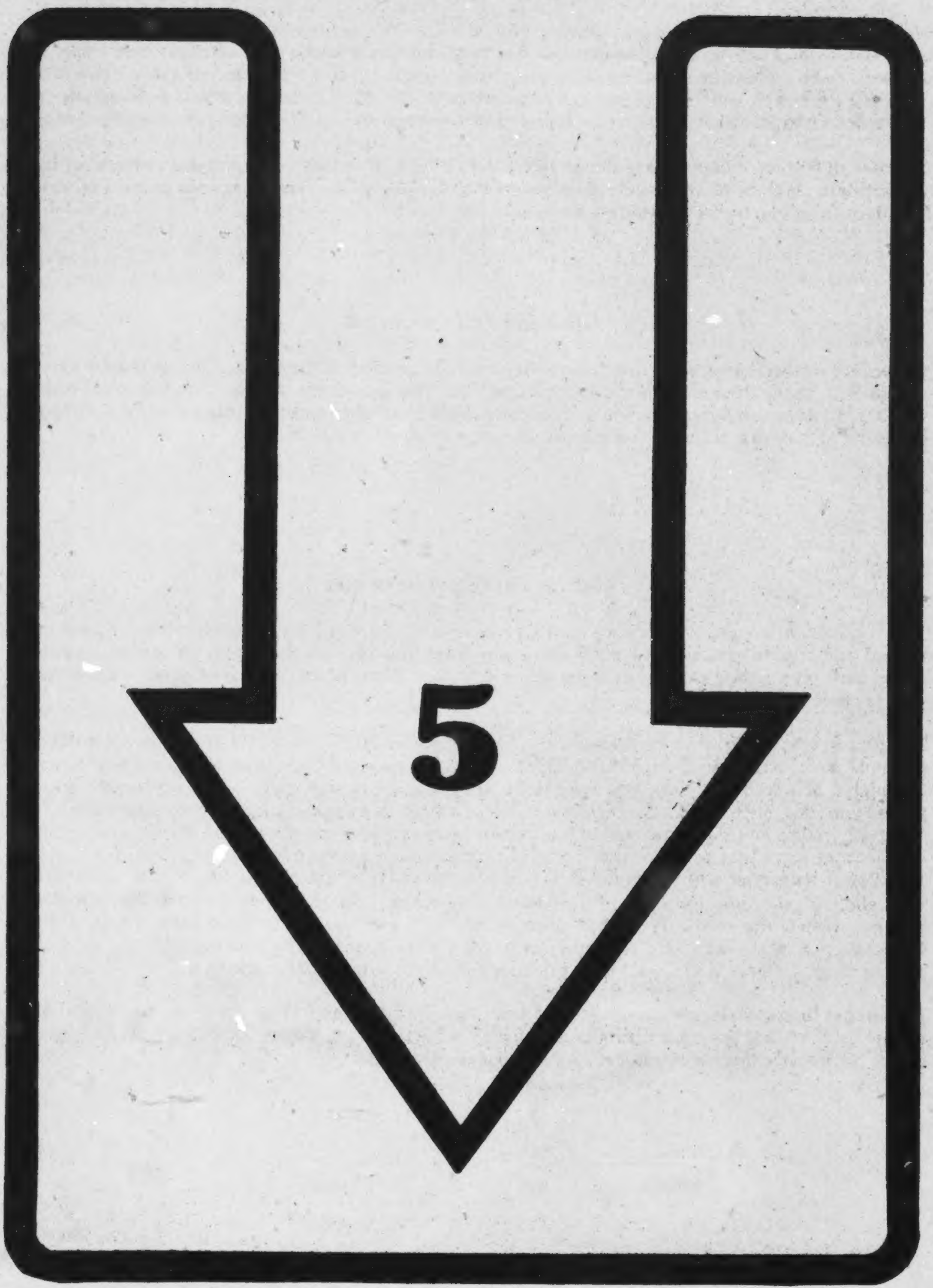
By writing to the Registrar of the college you attended, a copy of your transcript of grades can be obtained. Usually there is a charge of a dollar or two. Remember to send your name, social security number, student number, and when you last attended. Have the transcript forwarded directly to the Registrar of your new school. You may also request a copy for your records.

The Evaluation Process

Don't count on credits transferring until you have received word from the Registrar of your new school that credits have been allowed. You may want to work with the evaluator of your credits to make sure all possible credit has been allowed. Then there is the matter of general credit over course credit.

The person who evaluates your transfer credits may not be familar with the course content of your previous work. And even though this evaluator will allow general credit to equal the work which you completed at another school, you may be loosing specific course credit. General credit merely means you have been awarded a certain number of credits in an area of study. This number is just a group of credits and does not equate to specific courses. In a program of study, several specific courses may have been set up as the "core" of courses which a person in your field should complete. Since your transcript will not show that you completed these courses, a few frantic movements immediately preceding issuance of a diploma may ensue. So as you go through the evaluation process, review the credit which has been allowed. If you feel errors have been made, see the Registrar. Explain why you feel transfer credits were inaccurately calculated. Bring course descriptions, outlines, and syllabi from previous schools to substantiate your claim.

Remember that course credit is generally better than general credit. But one important point: The school to which you are transferring must have a course similar to the one in which you want course credit. Otherwise there is no choice but to issue general credit.


5

CHAPTER FIVE

Layout a Program of Study

Course plans are available for you for most occupational areas. These plans are called curricular guides. Often curricular guides are designed by advisory committees made up of employers in the subject area. The curricular guide is a good source to begin with. But beware of curricular guides until you verify that the courses indicated are actually appropriate to your particular career intentions. Perhaps only a slight change in the curricular guide you follow can make a significant difference in how well prepared you are for your future job. Remember: Curricular guides are for the average person. If you feel the plan is correct for you, go to it. But, if you need a program of study for yourself, designed based on your interests and ambitions, then probably no curricular guide has been designed. Therefore, you must set up your own. Make changes to the curricular guide as you like.

Once you have set up a plan just for you, remember that the most important person to agree that your plan will get you the job you want is the person who will eventually give you that job: An employer. And also remember that if you expect your program of study to lead to a degree, then you must also run your plan past the college or university where you will eventually obtain a degree. degree.

Program of Study

A program is defined as an arrangement of related courses in which planned instructional activities are provided for the attainment of educational goals. A program can be as short as one seminar or as long as an unlimited number of courses over a lifetime.

Associate Degree programs generally consist of 90 term hours of credit and are an aggregate of the following types of courses:

> Occupational specialty courses teach the special skills, knowledge, techniques, applications procedures, materials, processes, operation, and services that prepare you for a career in a particular occupation.
>
> Supportive study courses teach the related science, mathematics, and technical principles, methods, and concepts necessary to the development of particular job skills.
>
> General education courses consist primarily of the social sciences, humanities, and communication studies. These courses provide you with basic reading, writing, and citizenship skills.

Courses Technicians Take

The curricular pattern set up for technician level studies is based on a firm core of applied mathematics and on applied science. Topics usually include algebra, trigonometry, geometry, and more often than not an introduction to calculus. These mathematic applications allow technicians to apply mathematics as a tool in the solution of technical problems which occur daily. Further the curriculum must include the fundamentals of science applicable to whichever specialty of technology you choose to pursue. Courses are typically more empirical than analytical. If you are a practical, pragmatic person you will have an easier time with technician programs than people who like to concentrate on the theoretical.

More than half of total class time is allocated to laboratory experiments, laboratory exercises and laboratory practice. Laboratories are often better equipped at colleges than in local business, government and industry. As desirable as up-to-the-minute equipment is to instructors, you as a student should investigate the equipment that will eventually be available to you in the "real world." If you find that your school has more modern equipment than your future employer, then realize you may have to do the job in a more difficult fashion with older equipment to be employable. But also learn the new equipment. You will also be more employable if you can run up-to-the-minute equipment. In fact, an employer may hire you simply to operate a new piece of equipment that is being purchased. Or did you already think of that?

Preparation for Classes

Getting ready to enter a program of study also takes work. When you know you want to get into a specific career field, ask around to learn which skills are necessary to be successful in the program. Is your entry level math skill adequate? Do you read at the correct grade level?

Refresher courses might be wise before jumping into a full schedule of college classes; particularly if you have been out of the classroom for a few years.

Yet, even if you are a recent high school graduate, you may want to brush up during the summer or while waiting for a program to begin. The higher your basic skill levels are when you begin, the more apt you are to finish.

Here are a few suggestions on how to get ready:

☐ Pick up a book on how to improve your reading. Read it.

☐ Pick up a book on how to study. Read it.

☐ Pick up a book on how to take tests. Read it.

☐ Pick up a book on how to improve your memory. Read it.

☐ Pick up a book on how to manage your time. Read it.

☐ Pick up a book on how to write a report. Read it.

☐ Pick up a book on how to use the library. Read it.

How Much Time Do You Have

As you are attempting to select or design a program of study, one important decision to make is how long you expect to spend to complete your training? How flexible do you expect to be? If only the degree is the requirement, go quick and dirty. Pull out all stops to show the degree. Going for all A's won't work. Just pass everything. No diploma yet has been written that shows your exact grade point average, except for honors. So decide what degree you want to show. Then get it. A quick degree is easy. The long ones are tough. Caution: If you aren't in a hurry, getting a degree may be very difficult.

Three Dimensions of Time

Most people think of time only in terms of calendar length. But in relationship to your participation in an educational system, the time you spend can be said to have width and height also. Let me explain. Length is measured with a calendar. Width is measured by the number of hours you will spend measured with a clock. Height is how ready you are to concentrate while spending width clock time. The greater the length the shorter the width can be. The quality of the time you spend is more important that quantity. Without height, time spent is only that: TIME SPENT.

Consider This

When you are threading a belt through the loops of a pair of slacks, if you can see the tongue, you put it through the first loop, right side out. If you happen to be in the dark, you first feel for the buckle. The buckle is usually easy to find because it makes noise even in the dark. When you find the buckle, you hold it so the fancy side will be on the outside. From the buckle, you then follow the belt back to the tongue. Then you start to put it through each loop. As you pass through each loop, you are careful not to skip the next loop. You are also careful not to put a twist in the belt. When both the buckle and tongue are in front, you put the tongue into the buckle. You fasten them. Then you slide excess into the last loop.

But consider the problems youngsters have with belts: twists, missed loops, and occasionally the entire belt may be wrong-side-out. To avoid these sorts of problems when threading your way through training for a job, your training for a job should begin with a feel for the type of job you want. Where is your job? Which side is out? Where are the loops? Once you know, you can then trace back through the sources you will need to get to the job.

When you find yourself at the beginning, then begin. One loop at a time. Occasionally feel to see that you didn't miss loops. When you've fastened the two,you can know it is right.

Term ____________________ Term ____________________

Course Title	Credits	Course Title	Credits

Term ____________________ Term ____________________

Course Title	Credits	Course Title	Credits

Term ____________________ Term ____________________

Course Title	Credits	Course Title	Credits

Term ____________________ Term ____________________

Course Title	Credits	Course Title	Credits

Term ______________________ Term ______________________

Course Title	Credits	Course Title	Credits

Term ______________________ Term ______________________

Course Title	Credits	Course Title	Credits

Term ______________________ Term ______________________

Course Title	Credits	Course Title	Credits

Term ______________________ Term ______________________

Course Title	Credits	Course Title	Credits

Term ____________________ **Term** ____________________

Course Title	Credits	Course Title	Credits

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Course Title	Credits	Course Title	Credits

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Term ____________________ **Term** ____________________

Course Title	**Credits**	**Course Title**	**Credits**

Term ____________________ **Term** ____________________

Course Title	**Credits**	**Course Title**	**Credits**

Have Your Plan Checked

Don't trust the final draft of your program of study to the evaluation of any one person. Have many different people review your plan. Listen to their reaction. But only consider each reaction as another opinion. After all, you are the person who will make the decisions. You will live with them. So what if you run the risk of a few, "I told you so's." At least you have had some control over your destiny. Ultimately, you may be pleased with your decision simply because it was your choice.

The people to "let in" on your plan as it evolves can include:

Check With These People	✓	Name
Representative Employers		
People Currently Doing the Work		
Career Planning and Placement Counselors		
Employment Agency Workers		
State Employment Office Representatives		
Professional Employment Counselors		
Family		
Friends		
College Faculty		
College Counselors		
Other Students		

A Degree? A Job? Or Both?

Your plan of study may not have to lead to a degree to be appropriate for the job you hope to get. Yet if you expect a degree for an unusual program of study, the proper college officials should agree with you that your plan meets degree requirements.

Articulation

Many colleges have established written agreements with other colleges that define which courses will transfer from one to another. These are called articulation agreements. A program which is approved by a college for an associate degree may transfer completely to a four-year school. This is called a 2 plus 2 arrangement: Two years at the first school and two years at the second school. So if you expect eventually to transfer to another school, you should inquire about articulation agreements. But don't just structure your program to get a degree and forget about your objective: to get the job you want. Try to always remember the job is what the plan is all about.

Self-Fulfilling Prophesy

When an event is anticipated to occur, the person in anticipation will affect the outcome merely by the act of anticipation. To think that one person can influence the performance of another person just by thinking about what the outcome of the performance will be sounds like mind control. Yet facts drawn from numerous scientific studies strongly indicate that the anticipated result in any situation is more apt to happen than not, when people are involved.

Instructors have long realized that by expecting students to perform well, students will perform better than if the same instructor has no set level of expectation. So if an instructor can affect a student in a positive fashion, why can't a student have a similar effect on an instructor? As a student, if you convey to an instructor the notion that you are capable of doing the assigned task, then that instructor may be more apt to think you can do the work. This type of feedback from student to instructor is what causes the level of instructor confidence to rise. Confidence is the feeling that eventuates from repeated positive feedback. The sooner you express your confidence in doing a task to an instructor, the sooner the instructor will reciprocate.

Where To Next

So you may have a few college credits earned from past experience. While reviewing those experiences you probably recall strong feelings about what you liked as well as what you didn't like in the training you received. Believe it or not, both what you liked and didn't like are important. By establishing boundaries to your desires through experience, you have already started the career selection process.

Leave Room For Alterations

When you are certain that your plan represents the best preparation for the job you want, then begin. Follow Henry Ford's advice: Take more time to change a decision than you spent making the decision. But remember that you are the person who will live the plan. If you see a need for change, then change away. Every so often, pull out your plan. Check to see if you agree with your earlier assessment. When the plan needs to be altered, work on it. As the plan again seems correct, move on. Feel confident in your accomplishments.

Deferred Gratification

The longer you must spend to reach a goal, the less chance you have of reaching that goal. How long will you be able to work toward a goal with only interim rewards like grades and comments from instructors? Here are examples of how deferred gratification works.When children see an ice cream store, they want a double dip cone immediately. Grade school children are told that if they behave they may be allowed to go out to recess for play in an hour. High school students have part-time jobs and are paid at the end of each week. Adults wait a year for a vacation. In each situation the group can wait for the gratification -- for a varyingly greater period of time. Further, the ability of a person to wait for a reward is usually regarded as mature. Well, don't you be taken in. If you expect to reach your educational goals, be like the youngest child. Scream if something happens that causes you to wait! Deferred gratification may be too great an obstacle for you to overcome. So decide how long you think you can hold out without a reward. Then make your career training plan for a day less than that period.

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CHAPTER SIX

Select Educational Methods

The next task is to select educational methods or combinations of methods that will allow you to retain, and even heighten your excitement. Colleges seem to be an excellent place where you as a student are allowed the luxury of selecting courses which you choose for your own reasons. You are also allowed to proceed at your own pace. Often you can even select the method of instruction. You will need to consult with the administrative staff of the school to find specifics as to procedure, availability and acceptablility of various educational methods. Keep asking until someone gives you what you want. A few of these educational methods involve work on the part of administrators, faculty and staff. If anyone holds you back, push them. And, if necessary, remind them that you are the reason they have their job! After all, you are a customer. Without you, they may have to close up shop!

Don't expect to find specifics on all educational methods in this book. Books have been written about each method. Further, the variety that any one of these forms can take is as diverse as instructors who use these methods. However, when selecting a school to attend, one consideration should be the flexibility in selecting educational methods. This chapter defines the more basic aspects of several educational methods.

Cognitive Style Map

Everyone has a personal style. Two hundred million people. No two just the same. Or so goes the jingle to a current TV commercial. Yet everyone does have a style of interpreting what happens around them based on their previous use of memory, the effect their environment has had, and their preference for solving problems one way or another. In the language of an educational psychologist, a Congitive Style Map (CSM) is the diagnostic tool that identifies a student's relative learning strengths on selected learning variables.

Certainly the technique to determine your CSM is beyond the scope of this book. Yet now you are aware of the existence of this tool to aid learning. It is a fact that the information so gained could provide you as a student with a significant advantage to adapt learning tasks to your cognative style and thus facilitate learning. As you find yourself having a difficult time learning, you may consult with a counselor about having a CSM done for you. Or if you find that you seem to be able to progress a bit short of a goal which you have set for yourself, a CSM might be the proper tool to move you that last difficult distance to reach your goal.

Traditional Classes

Everyone has participated in a traditional class where the instructor sits/ stands before a group of students. This is also called a lecture session. Information goes directly from the notes of the instructor to the notes of the student. (Often said to do so without passing through the minds of either. Probably this is the concept on which Xerox is founded. After all, why not just make copies, distribute the copies, and adjourn?) Traditional classes allow time for questions on points that are unclear. And there is present in the classroom the elusive spark of desire said to be created only when a group of learners pursue knowledge together. You've had your share of classes like this, so they will be nothing new.

Project Labs

A way to have all the facilities of your school available for doing a project or completing extra experiments is to enroll in a project lab. Find a faculty member to sponsor you. Agree on the project to be completed and method of evaluation. Then do it. Make it. Build it. Draw it. Design it. Whatever it is. With the benefit of the use of the equipment at your college, you'll be able to produce a project as good as your time and desire allows. Your project may even be some task completed out of school. None-the-less, you will have the benefit of your instructors' experience. Usually you must first submit a written proposal to the instructor clearly explaining just what you will do. You set a time limit. And then have fun. Fun is the word which best describes this educational method.

Tutorial Class

An instructor may be scheduled to meet with less than a full class on a reduced time basis. The notion is that since there are fewer students in the class, the instructor should be able to teach the class in less time. A tutorial class can be excellent. The course can be better tailored to your needs. And you will have more time to ask questions. But you will be expected to work much harder than in a regular class. Usually you will have no choice in this matter. Tutorial sections are set up when enrollment is low but not low enough to cancel. By asking around at the beginning of the term, you may find out about these classes. Seek them out if you're eager to learn this way.

Audio Visual Tutorial

A self-pace method of instruction like watching television is the Audio Visual Tutorial System. A tape plays audio, slides provide the visuals and supportive printed materials and experiments round out the learning package. Students sit in a booth, listening , watching, and doing. This system is available for introductory level courses. When you need to go back over a point you don't understand simply turn back the tape and slides to replay the portion not understood. This course is best in the beginning stages when "just one more time" will help to make you understand.

Independent Study

Whenever possible, independent study of subject matter is the way to learn best. Independent study isn't the fastest way to get credits. It isn't the easiest. But certainly you will learn. The best technique to use to be successful is to pick up an outline for the course. Meet with an instructor to set up a study plan on the content. Agree on the method of evaluation. Then take off. Consult with faculty, workers, books, and magazines; anyone and everything to learn what you need to know. Keep going until you have the answers you need. Independent study has as half of its title the word study. Don't mess with independent study unless you expect to work. There is no class to protect you. You cannot expect to coast through classes and tests. Independent study means you do it all. No one does anything for you. If you are up to the challenge, you'll enjoy the rewards. Independent study allows a better student the chance to get a headstart on a specialty area with intensive study and practice. This form of education is also referred to as contract learning when an agreement is drawn up that explains what is to be done between a student and instructor.

Work Study

One very valuable way to accumulate credit is through a program where you work on the job then receive supplemental training when necessary. One form that this training takes is work study. As a student you are paid a low amount for the work which you do. But you are working to gain experience of whatever level of proficiency possible.

The value is strictly positive. Regardless of the number of credits earned, or dollars earned, every attempt should be made to go work study. Programs vary from one term in school and the next on the job. Other variations include mornings at school and afternoons at work.

Internship

Unlike work study, the intern student is not paid. But this experience has a very high value. If you are a person just ready to graduate, you are an excellent candidate for an internship. Not only will you be in an on-the-job environment working with people in your future career every day, but if an opening happens to open while you are there, you'll probably get first crack since the people there know you. You must seek internship. Normally an internship will not come to you. Design a proposal in advance then present it to an employer. A proposal usually contains your personal information, a suggestion as to the sort of work you would like to do, and the times you would be available. Colleges may have a few programs set up this way. Look for more internship opportunities to open soon.

Cooperative Education

Another educational experience available to you as a student is cooperative education. This form of education allows you the benefits of an internship with the added reward of payment for work performed. This educational experience allows the community to be served by students, yet also provides the student with a real life learning situation. The chance for you to test theoretical and practical skills in an on-the-job situation and the earned payment can help you become more aware of the need for productivity. A positive cooperative experience can move you toward being a better adjusted member of the work force. Success will enhance your self concept. This educational method will usually be available as soon as you can do the job.

Volunteer Work

Students seem to overlook the possibilities of work experience through volunteer efforts. An excellent option open to anyone is to offer your job skills for free to get practice. The possibilities have opened substantially in recent years. To find out where your job skills might be polished contact any volunteer agency. Also, let everyone know you're available. Experience as a volunteer looks very good on a resume. And this volunteer work can pay off in many other ways. Chances are you will meet others who do the same work. They may know of an available job for you. At any rate, a solid year of volunteer work experience can be an excellent aspect of your work history. If you don't want to get involved in a long-term commitment, at least spend a day or a week. Even if you only watch people do what you want to do, you'll certainly profit from the observation experience.

Are You A Working Technician Without A Degree?

Through extensive training on the job, you may be one of the thousands of people who possess all the necessary skill to do your job as a technician. But you may not have been trained in a school setting that allowed you to get a degree. There is a way for you to get a degree that will save time and be of interest and benefit to you:

☐ Find a school that offers a degree program in your specialty area.

☐ Visit the school to determine if work experience credit is allowed.

☐ Visit the school to determine if proficiency exams can be taken.

☐ Document your work experience and submit it for evaluation.

☐ Document your licenses, correspondence schools and other schools.

☐ Consider taking CLEP examinations for college credits that you deserve.

☐ Present a copy of all this information to a Registrar for evaluation.

☐ Discuss with a faculty advisor the courses which would fit best.

☐ Take proficiency examinations for credits that were not transferred.

☐ Determine with the registrar and academic advisor which courses to take.

☐ Select courses which will add to your current knowledge.

☐ Draw up a plan of study to show which courses to take and when.

☐ Make formal application to the college and be admitted.

☐ Enroll for courses each term according to your plan that is approved.

☐ Complete all course work as stipulated.

☐ Submit a request for a diploma to the Registrar.

☐ Graduate
☐ Have a party and thank everyone for helping you to succeed.

☐ Seek additional training and degrees based on your educational plan.

Things to Know

Academic Advisor	the person who can best help you select courses.
Activity Fee	the money paid by students for social activities at the college.
Application Fee	the dollars paid to become registered as a student.
Cancelled Classes	those classes which did not have enough students to run.
Change of Elections	the time when a student can change classes or sections.
College Catalog	the written listing of all programs - courses - services.
Co-requisite	that course which must be taken at the same time as another.
Course Code	the course number and letter combination that names it.
Course Description	the written description of a single course of study.
Course Title	the written title which names a specific course.
Credit by Examination	the chance for a student to earn credits by testing.
Department Approval	the signed permission to enroll for a course.
Drops and Adds	the time when a student can change classes or sections.
Early Registration	that time when students can sign up for classes early.
Faculty Advisor	the person who can advise you about college matters.
Financial Aids	any dollars paid to students to assist with tuition, books, etc.
Instructor Approval	the signed permission of an instructor to take a course.
Lab Deposit	the dollars paid in advance and returned if all equipment returned.
Lab Fee	the dollars paid by a student for materials "used up" in class.
Late Registration	the last time a student can register for a class.
No pre-requisite	a course that can be taken without other training.
Pre-requisite	the course(s) which must be completed before taking another.
Proficiency Exam	the chance for a student to get college credit by testing.
Program Description	the written explaination of an entire program of study.
Re-admit	a student who has attended a school but not the previous term.
Recommended	although not required, a factor to be considered in selection.
Registration	the normal time when students can enroll for classes.
Residency	the determination of students' legal address for tuition purposes.
Schedule Book	the listing of all courses offered by a college each term.
Section Number	the specific course by day-time-place and instructor.
Semester	the length of time classes run. Usually longer than a term.
Seminar	a short course of a few hours or a few days.
Student Aide	a person who works for the school while going to that school.
Student Guide Book	the policy statement of a college with rules and regulations.
Term	the length of time when classes run. Usually shorter than a semester.
Transcript	the record of all courses and grades for each student.
Transfer Student	a student who expects to complete a degree at another place.
Tuition	the dollars paid by the student to go to school based on credits.
Tuition Refunds	the return of money to students for classes not taken.

7

CHAPTER SEVEN

Investigate Colleges

Proximity to a college has a great influence on where most students attend. But as you have discovered in previous chapters of this book, a training program should be designed and selected because the training program will qualify you for an entry-level position based on the skills you have learned. Or you may take training that will allow you to enter a higher level program at another college.Therefore selection of a college to enter should primarily be made based on where training is offered that will move you toward your career goals.

Yet if you are unable to commute or move to a school not nearby because of other commitments to a family, a job, or other personal activities, then you might alter your career goals to reflect the most desirable training program available to you.

Making good choices about selection of a school to enter, meeting entrance requirements, and registering for classes may be more important to you than deciding on a career field. After all, you will have no chance for success in your career field if the training you receive is not realistic preparation for a job. Therefore, you must check the quality of a college before you begin to study. If you detect deficiencies in the program, mention them to the department Chairperson where they exist. Perhaps changes are more apparent to you from outside the school setting. Even if the school doesn't make changes which will help you toward your career goal, you can make other arrangements. For example, if a specific line of study is not offered that you need, you might attend another school, or take a correspondance course, or hire a tutor to educate you. Also, if lab equipment is unavailable at the school of your choice, you might work as a volunteer for a company that has the equipment available, or you might have someone who uses the equipment give you a demonstration. You may even buy the lab equipment yourself for maximum benefit.

The explaination of examples can go on and on. You get the idea.. Select a school that can offer you the best quality education in the largest quantity appropriate to your career selection.

How To Select A College

Now you have an idea of where you want to find yourself after this period of education. So now is the time to ask around to find the best school for your education and circumstance. First, write for information. Next, visit schools that seem to have the courses you want. Talk with administrators, faculty, staff, and students to get a feel for the way things are done. If you like what you see, you may have found a home. Perhaps not all units of your program will be conducted at the same school. So you will need to visit several schools. So do it.

As you are checking out schools, you probably will find that some colleges may not be as progressive and / or liberal as you would like. Ask questions. Push. Find out why, or why not. Be aggressive short of being obnoxious.

Selecting a college should be based on the fact that courses in your specialized program are offered. Be sure to talk with the admissions counselor. Show them your plan. Ask them what is involved in the admissions procedure. Ask to see a faculty advisor. Go right to the faculty advisor. If the faculty advisor is not an instructor in the area which you expect to study, then go to the college department office where your program falls. If your program overlaps two departments, go to both. Ask to talk to a faculty advisor or program co-ordinator about your plans and selection of educatonal methods.

Characteristics of Quality

Here are few items to consider:

Do the program performance objectives represent the minimum job skills and knowledge required for successful initial employment?

Is the curriculum designed to provide students with the skills and knowledge necessary to acquire and practice the initial job competencies, e.g. cooperative education, intership, clinical experiences, or laboratory experiences?

Are occupational courses available and applicable to persons who are already employed and wish to upgrade or update their job competencies?

Is program and course content periodically reviewed and updated to keep current through instructor and / or administrator contact with employers and advisory committee members?

Is the condition of instructional equipment currently being used in the program representative of that found currently in the occupation?

Is instructional equipment available in sufficient quantities for the number of learning stations contained in the laboratories?

Are job placement services provided by the college for students who graduate?

Are occupational guidance and counseling services available to full and part-time day and evening students prior to or during their enrollment?

Are career program orientation experiences available to all interested students?

Does a plan exist which allows the advanced standing of people who have had previous learning experience related to program goals?

What it the condition and quantity of lab equipment?

Does the lab environment realistically simulate working conditions?

Is there a library of support information available for student use?

Do the faculty members have recent work experience in the subject area?

Are classes scheduled to accomodate your educational plan?

Is there an active career planning and placement office?

Is there an opportunity for you to use open lab facilities?

Are classes held at convenient times relative to your work schedule?

Are technician programs articulated for transfer to technologist programs?

BASIC EDUCATION OPPORTUNITY GRANT PROGRAM (BASIC GRANT)

The *BASIC ECUCATIONAL OPPORTUNITY GRANT PROGRAM (Basic Grants)* makes funds available to eligible students attending approved *COLLEGES, COMMUNITY/junior colleges,*

The *BASIC EDUCATIONAL OPPORTUNITY GRANT PROGRAM (Basic Grants)* makes funds available to eligible students attending approved *COLLEGES, COMMUNITY/JUNIOR COLLEGES, VOCATIONAL SCHOOLS, TECHNICAL INSTITUTES, HOSPITAL SCHOOLS OF NURSING*, and other post-high school institutions.

In academic year 1977-78 (July 1, 1977 to June 30, 1978), you may apply for a Basic Grant if you are an undergraduate student enrolled on at least a half-time basis in a program of study which is six months in length or longer.

To *APPLY* for a Basic Grant, you must complete a form called *"APPLICATION FOR DETERMINATION OF BASIC GRANT ELIGIBILITY"* for the 1977-78 academic year.

You may get copies of the application from *PASTSECONDARY EDUCATIONAL INSTITUTIONS, HIGH SCHOOLS, TALENT SEARCH, UPWARD BOUND PROJECTS*, and *PUBLIC LIBRARIES*, or by writing to P.O. Box 84, Washington, D.C. 20044

Send the completed form in accordance with the instructions on the application. Within six weeks you will receive a notification of your eligibility.

***SUBMIT* the Notification to your *SCHOOL* which will calculate the *AMOUNT* of the Basic Grant you are *ELIBIBLE* to receive. (You may submit the Notification to more than one school.) The amount of your award will be based on your determination of eligibility and the cost of attendance at your school.**

SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT (SEOG) PROGRAM

The *SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT (SEOG) PROGRAM* is for students of *EXCEPTIONAL FINANCIAL NEED* who without the grant would be unable to continue their education.

You are eligible to apply is you are enrolled at least half-time as an *UNDERGRADUATE* or *VOCATIONAL* student in an educational institution participating in the program. Graduate students are not eligible.

If you receive an *SEOG*, it cannot be less than $200 or more than $1,500 a year. Normally, an *SEOG* may be received for up to four years. However, the grant may be received for five years when the course of study requires the extra time. The total that may be awarded is $4,000 for a four year course of study or $5,000 for a five year course.

If you are selected for an *SEOG*, your educational institution must provide you with *ADDITIONAL FINANCIAL ASSISTANCE* at least equal to the amount of the grant.

***APPLY THROUGH YOUR FINANCIAL AID OFFICER.* He is responsible for determining who will receive an *SEOG* and the amount.**

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COLLEGE WORK—STUDY (CWS) PROGRAM

The *COLLEGE WORK—STUDY (CWS) PROGRAM* provides jobs for students who have great financial *NEED* and who must *EARN* a part of their educational expenses. You may apply if you are enrolled at least half-time as a *GRADUATE, UNDERGRADUATE*, or *VOCATIONAL* student in an approved pastsecondary educational institution.

The education institution which participates in College Work-Study arranges jobs on campus or off campus with a public or private nonprofit agency, such as a hospital. If you are found to be elibible, you may be employed for as many as 40 hours a week.

In arranging a job and determining how many hours a week you may work under this program, the financial aid officer will take into account: (1) your *NEED* for financial assistance; (2) your *CLASS SCHEDULE;* and (3) your *HEALTH* and *ACADEMIC PROGRESS.* In general, the salary you receive is at least equal to the current minimum wage. Maximum hourly wage rate depends on the job and your qualifications.

APPLY THROUGH THE FINANCIAL AID OFFICER AT YOUR SCHOOL. He is responsible for determining your eligibility and arranging the job.

The *NATIONAL DIRECT STUDENT LOAN (NDSL) PROGRAM* is for students who are enrolled at least half-time in a participating postsecondary institution and who *NEED* a loan to meet their educational expenses.

You may borrow up to a total of: (a) $2,500 if you are enrolled in a vocational program or if you have completed less than two years of a program leading to a bachelor's degree; (b) $5,000 if you are an *UNDERGRADUATE* student who has already *COMPLETED 2 YEARS* of study toward a bachelor's degree. (This total *INCLUDES* any amount you borrowed under *NDSL* for your first two years of study); (c) $10,000 for *GRADUATE* study. (This total *INCLUDES* any amount you borrowed under *NDSL* for your undergraduate study.)

REPAYMENT begins 9 months after you graduate or leave school for other reasons. You may be allowed up to 10 years to pay back the loan. During the repayment period you will be charged 3 percent interest on the unpaid balance of the loan principal.

No payments are required for up to three years while you serve in the Armed Forces, Peace Corps, or VISTA.

APPLY THROUGH THE FINANCIAL AID OFFICER AT YOUR SCHOOL. He can also tell you about loan *CANCELLATION PROVISIONS* for borrowers who go [illegible] certain fields of teaching or specified military duty.

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GUARANTEED STUDENT LOAN PROGRAM

The *GUARANTEED STUDENT LOAN PROGRAM* enables you to borrow directly from a bank, credit union, savings and loan association, or other participating lender who is willing to make the educational loan to you. The loan is guaranteed by a State or private nonprofit agency or insured by the Federal Government (See attached list of State agencies).

You may *APPLY* for a loan if you are enrolled or have been accepted for enrollment at least half-time in an eligible *COLLEGE* or *UNIVERSITY*, a *SCHOOL OF NURSING*, or a *VOCATIONAL, TECHNICAL, TRADE, BUSINESS*, or *HOME STUDY SCHOOL.*

The *MAXIMUM* you may borrow as an undergraduate is $2,500 a year. A graduate or professional student may borrow up to $5,000 per year (in some States it is less). Your *INTEREST* cannot be more than 7 percent.

The *TOTAL* amount you may borrow for undergraduate or vocational study is $7,500. The total is $15,000 for graduate or professional study, including loans made at the undergraduate level.

Most students are eligible for Federal Interest Benefits. If you qualify for these benefits, the Federal Government will pay the interest for you until you must begin repaying the loan.

(1) If your adjusted family income is less than $25,000, you automatically qualify for the interest subsidy.

(2) If your adjusted family income is $25,000 or more and you wish to apply for the interest subsidy on a loan of any amount, you must submit to the lender a *RECOMMENDATION* from your school, based on an analysis of your need.*

*Through an "analysis of your need" the school determines how much money you actually need to continue your education. It takes into account the cost of your education and your family's ability to pay for it.

The *LOAN MUST BE REPAID.* Payments normally begin between 9 and 12 months after you graduate or leave school and you may be allowed to take up to 10 years to repay the loan. The *AMOUNT* of your payments depends upon the size of your *DEBT* and your ability to pay; but in most cases you must pay at least $360 a year unless circumstances as agreed upon by the lending institution warrant a lesser amount.

You do not have to make payments for up to 3 years while you serve in the Armed Forces, Peace Corps, or full-time volunteer programs conducted by ACTION (which includes VISTA, University Year for ACTION, ACTION Cooperative Volunteer Programs, Volunteers in Justice, and Program for Local Service). In addition, deferment is available any time you return to full-time study at an eligible institution, or are pursuing a course of study under a graduate fellowship program. A single deferment for a period of not more than one year is also provided for students who are unable to find full-time employment.

Information and application forms are available from schools, lenders, State Guarantee Agencies, and Regional Offices of the U.S. Office of Education.

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Open Door

When you as an aspiring student are not required to take and pass entrance exams for admission to a school, the school is said to have an open door policy. Anyone who seeks admission is accepted. Obviously, if you have the desire to succeed, with stick-to-it-ive-ness you can complete a degree program and become a technician. Many times the local college is referred to as the best hope for anyone to obtain an education based on current and projected manpower needs in the community, region, state, or nation.

Revolving Door

Perhaps easy access to education is too easy! Perhaps people entering into classes don't realize the amount of time and effort that will be necessary to do the schoolwork. Without testing or guidance, a person can pick and choose courses that seem right. Yet without some help from friends, counselors, or instructors selecting first courses can be a disaster. You may feel frustrated in your attempt to master a course when you are not really prepared to even enter the course. Therefore, you may well slip in and slip out before you are even aware.

Yes, a college may be at fault when allowing just anyone to have rapid, easy, even walk-in access because of the open door policy. But then this open door policy works for anyone who is serious enough about the approval. At least everyone can have a chance to get a start. How each person uses that chance is as varied as there are people.

To succeed, you must make an honest effort or the open door may work like a revolving door: You either know enough to jump to the inside space for education or the door may come up behind you and push you outside again. Apparently, you are interested in success since you are reading this book with helpful information. That is a good indication that you will be successful.

Competitive Entrance Exams

If the school you plan to attend requires an entrance exam of any sort, there are a few things you must consider. The first centers on your desire to enter that particular school. After considering other schools, if you are certain you want to enter, then go through these tasks carefully:

☐ Obtain complete entrance information from the college.
☐ Study the rules, policies, and requirements carefully.
☐ Question an admissions counselor on vague items.
☐ Draw a time line to show when tests are administered.
☐ Ask around to find other students who have taken the exam.
☐ Determine what the tests are like from successful students.
☐ Locate self help books written for people just like you.
☐ Study enough so that you feel comfortable with the subject.
☐ Take time to be coached by tutors who are experts.
☐ Relax the full day before each test.
☐ Sleep well before the exam so you are prepared physically.
☐ Eat moderately or not at all before the test.
☐ Report a bit early to the test location to avoid being late.
☐ Wait for the test to begin by yourself in a quiet place.
☐ Enter into no discussions with others to be tested before the exam.
☐ Submit to the test and do well, checking each item.
☐ Record test items when you return home for future use.
☐ Await results with confidence that you did your best.
☐ Enter the school or get ready to re-take the tests next year.

Successful admission to the school of your choice is the most difficult aspect of many career training programs. The preparation to pass entrance exams may involve a more intensive period of study than at any other time in the program. Many students do not realize this fact. Now you do! So don't be proud. If you want to succeed, the time to begin is even before the program begins.

Where You Are Now

Before beginning a technical level program of study, an investigation into your proficiency in reading and math is advisable. Typically, colleges conduct this testing without charge. Ask around to find where tests are given. Usually you don't have to be an enrolled student to take these tests. Most technically oriented courses use books and supportive reading materials written at the 12th grade level. Yet many texts lack uniformity in levels and will often shoot to 14th or 16th grade for pages and even whole chapters. If you expect to cope with technical reading, some reading training is necessary. The level of math skills necessary will vary substantially with courses and programs. Discuss your math competency with a faculty advisor. Bring with you the score on your math assessment test. Then discuss the level of math necessary for your program. One fact is clear: To learn a technical subject and math concepts at the same time puts a double strain on you as a student.

Admission Check List

☐ Have a chat with an admissions counselor.

☐ Complete the necessary forms and records.

☐ Provide proof of residency for tuition purposes.

☐ Ask to take a math evaluation test.

☐ Ask to take a reading evaluation test.

☐ Ask where career counselors can be contacted.

☐ Request transcripts to be forwarded to the school.

☐ Complete financial aids forms like Basic Education Opportunity Grants.

☐ Ask about possible scholarships.

☐ Sign up for benefits if you are entitled.

☐ Ask who will evaluate your transfer credit.

☐ Submit copies of military records, licenses, certificates.

☐ Have records of correspondence schools forwarded.

☐ Take CLEP exams if possible.

☐ Visit all faculty advisors in your subject area.

☐ Visit the department office.

☐ Visit counselors to discuss problems of any sort.

☐ Visit Career Planning and Placement Office.

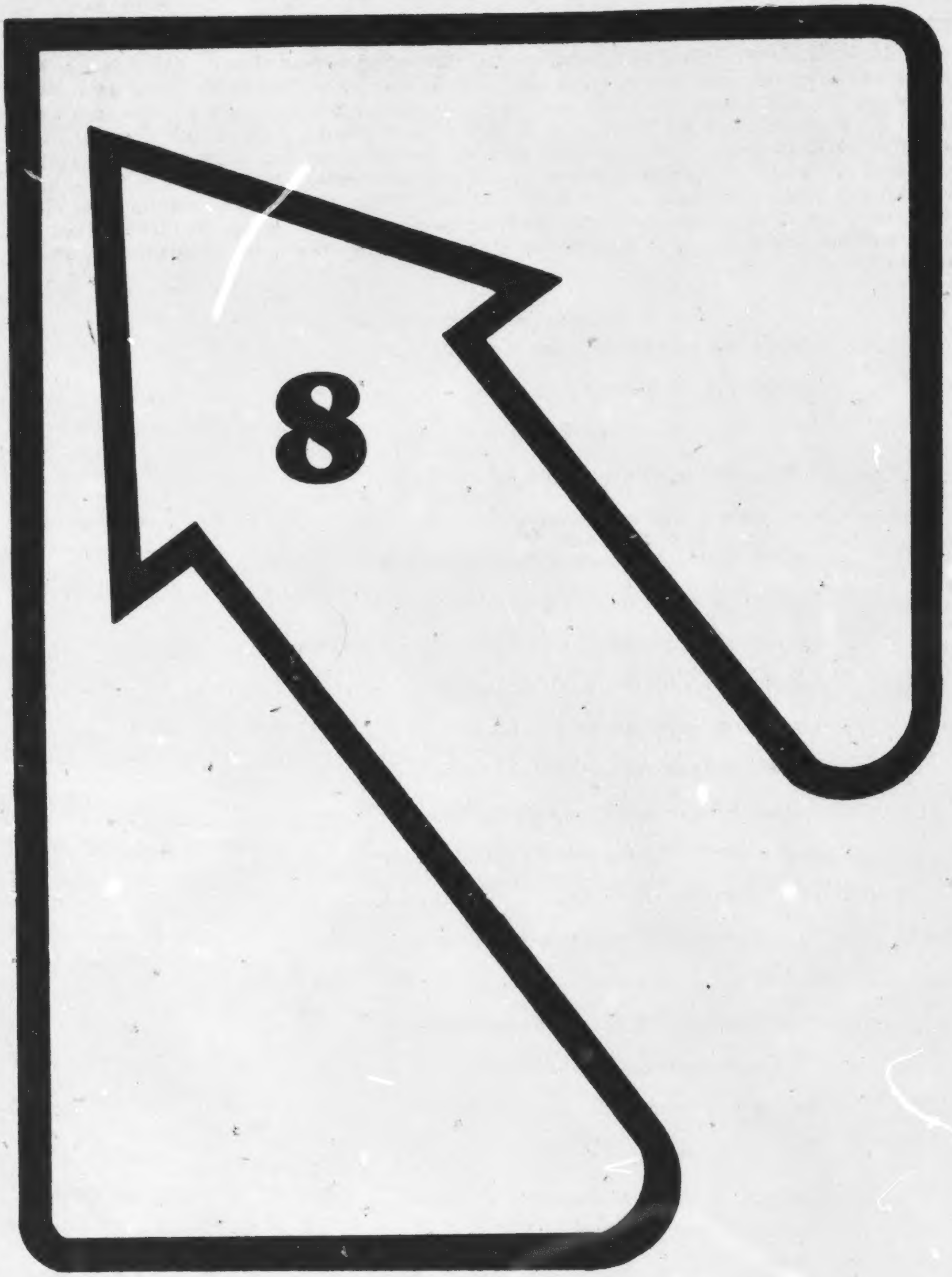
☐ Walk around the campus.

☐ Check out the labs and classrooms.

☐ When you are sure the school is for you, enroll.

You Are in Charge

You have already reviewed a considerable portion of this book. You may have even begun to plan a technical career. At this point, however it is important that you realize you are responsible for your own future. In other words, you are in charge. The amount of input you place in your career program will be directly propotional to the benefits you receive and satisfaction you feel. Don't short change yourself. Plan for your best possible future job, opportunities and lifestyle.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CHAPTER EIGHT

Get Along In Class

After you are counseled, admitted, enrolled, and attending, the real action begins. You have planned for the moment when you would begin to acquire the subject knowledge you crave. But through all the planning, counseling, and advising, no one has given you even the slightest clue about how to "do" a class or how to get through a course.

Course Objectives

During the course, certain aspects of the subject will be assigned for you to learn. Usually a discussion will be followed by a demonstration. Then you will be expected to demonstrate whatever technique is to be learned. These problems, techniques, or subject skills are why you are in the class in the first place. They are the objectives of the course.

If you happen to be in school before the course begins, ask for a copy of the course objectives. Make sure you at least get the objectives during the first week of class. Most experienced instructors will pass out course objectives during the first class meeting. Instructors realize that you as a student would like to know that is expected of you right from the start. If you get lost and /or suffer problems later in the course and haven't asked for course objectives, blame yourself.

Selecting Instructors

The very best instructor for any technical subject is a person who has a full understanding of the theoretical aspects, complete knowledge of the practical applications of the theory, the ability to actually do the work, and can teach all of this to others. If you think this is a tall order for any one person to fill, you are correct. Few instructors can rank tops in all categories. Yet these super instructors do exist. You'll meet your share. As a student, you can select an instructor for a course who will be best suited to your needs by keeping a few things in mind:

- Select an instructor who has a good knowledge of the subject.
- Check for an instructor who is organized for each class.
- Ask if the instructor makes clear presentations.
- Find an instructor who encourages class discussion.
- Choose an instructor who can provide satisfactory answers to questions.
- Ask if the instructor explains the grading system from the start.
- Pick an instructor who is enthusiastic.
- Ask if the intructor make presentations interesting.
- Find an instructor who is willing to spend other than class time to help you.

Lab Instructor Selection Guidelines

As you are attempting to select a lab instructor, these are a few observations which you can make before the course begins:

- Does the instructor move about the lab from student to student?
- Does the instructor offer encouragement and praise?
- Does the instructor have things ready for students?
- Does the instructor use mock-ups for explanations?
- Does the instructor demonstrate slowly and completely?
- Does the instructor take time to check the work of every student?
- Does the instructor seem to have a plan in effect?
- Does the instructor keep all students interested and busy?
- Does the instructor spend the full period in the lab with students?

Getting Along With Instructors

Instructors are people too. Typically they are dedicated to helping students. Ask questions of them only after trying to find the answer yourself. But don't be afraid to ask for help. After all, the business of an instructor is to help students get up to the proficiency skill level of the course objectives. The best time to ask an instructor for individual help is when the instructor is not in charge of a group of people. At these times the instructor can take time to help you. Before class is not the best time to ask questions. An instructor is then getting ready and needs time before class to lay out course demonstration materials and review notes. And break-time during class might not be a good time. Your instructor may want to take a few minutes to go to the restroom. And if you and other students ask one question each, then the instructor may become irritated. Then the best times to ask questions are: when the instructor asks for questions, when in a lab setting the instructor has time to spend with you, and after class. Another possibility is that office hours may be a better time to ask questions for you than during class. At least an hour each week is set aside by faculty for students to drop in and ask questions. Ask your question, get an answer, and leave. Then you'll be welcomed back again. Avoid coffee time with instructors during office hours unless invited. Other students may have questions also.

Tutors Available

When you discover you are having substantial difficulty with course work, then you may need more than a small amount of help. Tutors are often available to serve as a private instructor for you and you alone at a specified time and frequency. The tutor may help you with theory, calculations, and/or practical applications of manual skills. This extra help is often available without charge. Other students may even be willing to help you. Regardless of who can help you, take advantage of the help. Brothers, sisters, children, or parents can also often help with school work! But if you feel you need a professional tutor to help, contact your school counselor. They can advise you of where to find help.

Character Types

If you find yourself in a lecture or lab section with an instructor that you don't like, think about this: The character types of workers in the field you are studying are probably represented by the instructors you have. After all, the instructor is the sort that you will eventually work with. In fact your instructor may someday be your employer. So if you don't like the type of instructor that you have for most of your courses, then consider switching to another area of study where you do like the instructor type. The best type instructor for you is one who you would most like to become, yourself.

Syllabus

The map for a course is that paper which lists critical information: a syllabus. Be sure to get one as early in the course as possible. Useful facts include reading assignments, problem sets, project due dates, exam dates, make up work policy, attendance policy, meeting time, meeting rooms, and important telephone numbers. Pay particular attention to open lab hours, instructor office hours, lab technician hours, and suggested supplies to purchase.

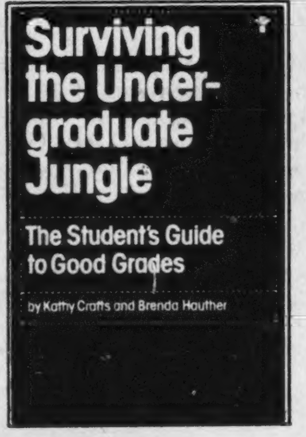
Attendance

Missing a technical education class is like not going to work. The next day in class you have no idea how to do the assignment. When progressively difficult manipulative skills or calculations are to mastered, missing a class period is disasterous. If you know you are going to be absent, try to go in ahead of time and learn the skills you'll miss. But certainly don't wait until the next class period to show up. By then you'll be two lessons behind.

Notes

One very important type of note to make is to write out any word you do not understand. Technical education means technical terms. The best note you can take is a list of new terms. Later look up definitions. Otherwise forget the notes. Follow the lecture, discusion, and demonstrations with full attention.

Another Book to Consult: **Surviving The Undergraduate Jungle** By: Kathy Crafts and Brenda Hauther. Published by: Grove Press, Inc., 196 W. Houston Street
New York, N.Y. 10014 $3.95


Surviving the Undergraduate Jungle
The Student's Guide to Good Grades
by Kathy Crafts and Brenda Hauther

Two Triumphant survivors of the academic jungle of the seventies share with their freshmen readers the secrets and tricks they learned after four years of painful trial and error. This basic training manual is full of an astonishing variety of detailed advice which can help any student shape his own destiny by playing the right card at the right time. Such helpful tips are included like: How to pick the right courses, how to cope with requirement courses, how to spot the right gut courses, how to pick the right professors, how to keep ahead of the rest of the class, how to master the basic six exam techniques and how to write a paper efficiently.

Decide Why You Are In Each Class

An often overlooked concern that is important to you is to decide just why you are in each class. For each course, you should know how the lesson objectives fit your program of study. You should know what is important and relatively how important. With the help of employers, employees, and instructors, you can prioritize the importance of each course objective to your future. Once you know the relative importance of course objectives, you can run your mental tapes at double speed when the session is applicable to your future; or run your mental tapes at half speed when the session doesn't fit into your needs. Get the idea? Find out what is important. Then tune in at will. Tune out as well.

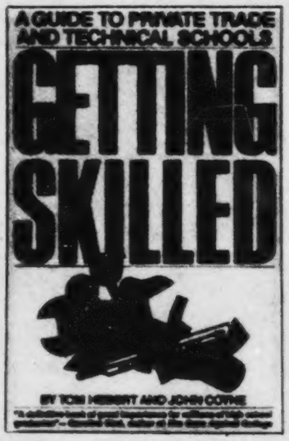
Dual Use Of Course Work

Whenever possible, submit similar work for different course credit. Example: for an English course, write a theme on some aspect of the area of your technical study. This way you will be able to reinforce your subject knowledge and still complete the English course requirement. The intent is not as much to get something for nothing as it is to have the luxury of time to improve your knowledge in a specific area which has a career application for you. Further, you will be able to assess your topic from many viewpoints after having done this a few times. While in the process, you'll also have the opportunity to further refine your knowledge.

Text Books

If the text for a course is useful to you and you like it, keep it. But if not, sell it. You'll probably never look at it again. Instead, use the refund to buy books that you will use. Reference volumes are especially helpful. Build your own reference library. You will then easily be able to research problems that come up later in your training. Stop in book stores where ever you go. You will be surprised at the low cost of many used books.

Another Book to Consult: **Getting Skilled.** By: Tom Herbert and John Coyne. Published by Sutton-Sunrise, Inc. New York $4.95


A GUIDE TO PRIVATE TRADE AND TECHNICAL SCHOOLS
GETTING SKILLED
BY TOM HERBERT AND JOHN COYNE

Even though this book deals specifically with private trade and technical schools, it is excellent reading for anyone about to select a school. The detailed report emphasizes that the prospective student should investigate the school before enrollment. An excellent set of questions begin on page 93. Don't miss this chance to become a better education consumer.

Write Out Definitions

An excellent habit to acquire if you expect to get through a technical program of study is to immediately write down words, phrases, concepts, and theories that are not known to you. Go to a textbook or dictionary. Look up the unknown item. Read through the explanation. If the definition is appropriate to the circumstance and /or context of your needs, then write out the definition longhand.

Then regularly make a list of all words on another sheet of paper. Without reference to the original longhand list, write out the definitions again. Compare the two lists. Make corrections and continue until you have mastered each term. This habit can be helpful to see you successfully complete college course work; yet this habit will be essential when you have a technical job and want to keep the job.

Open Lab Time

If you expect to develop occupational competence adequate to be able to get and keep a job, you need to spend time in practice. Most technical careers require a high degree of manual skill using measuring instruments. The more time you spend in practice, the more competent and confident you will become. Your college lab probably is equipped with apparatus as good as, if not better, that where you will eventually work. So take advantage of every item. Further, if you see equipment around the lab that is appropriate to your career choice, learn how to operate everything.

Don't be concerned that you are the only student in the lab during an open lab session. In fact, if you are not positively anxious to get to work in the lab whenever you have a chance, then you may have selected the wrong career field to train in. To be good at anything, you should really like to do it. You should feel enjoyment each moment you walk into the lab. You should not wonder when the lab period will be over. You, in fact, should be disappointed when the lab period is over.

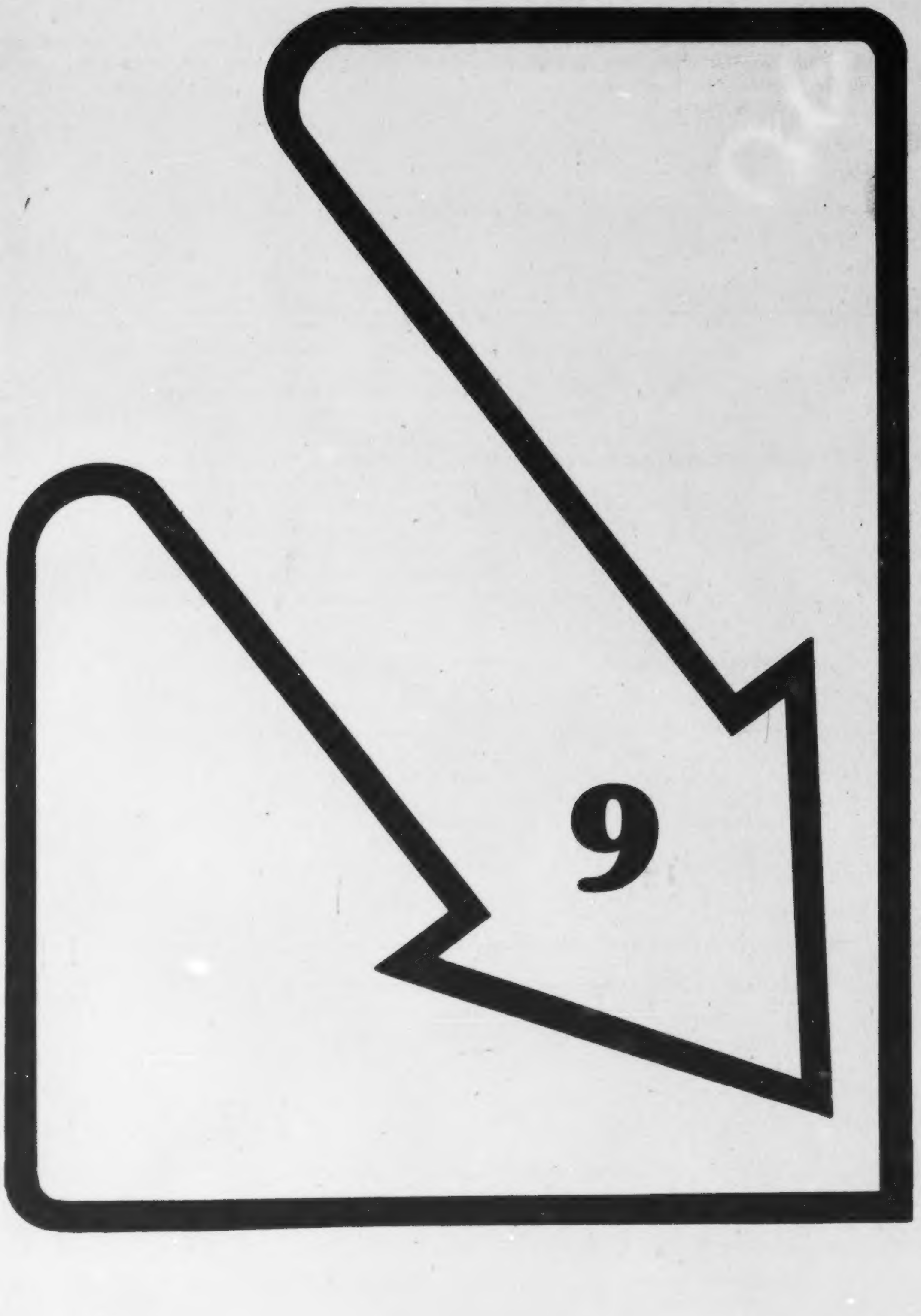
Use Support Materials

You are not the first person to learn concepts or practice techniques for your courses. Others have studied and mastered these same problems and procedures. When you find yourself not able to satisfy your curiosity with available materials, move into the larger world of government, business, and industry publications.

Here are a few types of support items available with information on how to track them down:

☐ Equipment Manuals	If you don't understand how to fully operate a piece of equipment or tool through class experience, or you want to learn more, copy down the name and address of the manufacturer and write for an owners or operators manual. There will usually be no charge for this. You may even find a toll-free number to call whenever you have a problem.
☐ Materials and Supplies Catalog	Begin to acquire catalogs relating to your career early. The best place to begin is Thomas Register. Any library can direct you to this manufacturer listing of all goods arranged by type of product. A letter to a distributor or manufacturer will produce more information that you thought existed. It is usually without charge.
☐ New Product Information	From manufacturers and distributors you may find a person who is the area representative for you. By writing to this person, you can often be placed on a mailing list to obtain releases about new products as they are announced. Another free service.
☐ Trade Journals	Consult your technical library for available publications in your specialty. Magazines often are referenced and indexed.

When you find items that are useful to you, make copies when possible or notes to refer to in the future. These materials can be added to your personal reference file.


9

CHAPTER NINE

Use Common Sense To Succeed

- Sit up front. That's where the action is.
- Be a helper for demonstrations. Get more hands on experience.
- Go for concepts during lectures. Fit information into your personal frame of reference.
- Relate everything to your past experience. If a fact is mentioned that you know, don't write it down. You already know it. Learn new stuff, not old.
- When studying for an exam, write out questions that you would ask if you were giving the exam. Write out the answers, then study both.
- Tutor other students whenever possible. Nothing helps a person learn like teaching.
- If a college level textbook is too difficult, find a high school level textbook about the same concepts. Read it. Then move up to the college text.
- Learn your instructor's name as soon as possible. Keep a record of all your instructors, courses, sections, and dates.
- If a few courses you need to take won't count toward a diploma, but the course will make you more employable, then take them. Extra courses may mean the difference between getting and keeping the job.
- Your vocabulary exposes your inner thoughts. If you repeatedly say you are going to school to receive a degree, then you don't give yourself a chance to internalize the real reason you are going to school; to become educated in a technological area and get a job.
- Give your family and friends a copy of telephone numbers at school and your schedule each term. Then, if an emergency message has to get to you, your people will know where you are.

Typing

A word about typing: DO! Or pay someone to do your typing for you. All your work will look better when typed. And you will be able to revise your efforts more easily from typewritten papers. After all, reading your writing can be a chore, as you well know. Most telephone yellow pages contain the heading "TYPING SERVICES". College campuses abound with notices of people who type for others. Perhaps you will need to put up your own note asking typists to contact you.

Bench At Home

Depending on your skill area, you may set up a place at home where you can practice skills. This is useful particularly if your studies involve manipulative skills which demand practice. Why not set up a lab in the garage or basement of your home or apartment? That way you will be able to always do practice work. Equipment need not be expensive or extensive, but can be improved as you progress.

Questions In Class - Yours

When you are lost in class or in lab, when you are not certain of what you are doing, ask questions. In class, ask the instructor. In lab, first ask your lab partner. Then ask the instructor if necessary. Your question can fit into a pattern. Here are a few samples:

- Please explain how____________________________relates to __________________.
- I don't see how_______________________is done.
- Would you show the steps in that calculation from_________________________again?
- Will you show me where I went wrong?
- How close am I to where I should be?

Questions Of Others In Class

When you find yourself in class listening to other students ask questions, pay attention only as long as it takes you to realize you already know the answer.

Then tune out! Don't listen to an answer that you already know. You can better spend the time looking up the definition of a word you don't know. Or copy the sample problem on the board. Or reclaculate or rethink your answer to the next problem. Or read your book. Or anything. But don't concentrate on the learning difficulties of others. Treat the class more like a television. Tune out when the action slows. Tune back in when the action picks up.

Tests

Don't worry about tests. Read the material. If you feel comfortable that you know it, then relax. If a test question is vague, answer as good as possible. Do not read more into the question than is asked. Flip the paper over and explain unusual or qualified answers on the back. Take your time on exams. You'll usually have more than enough time. Check over all your work. Read over the exam. Then turn it in. Don't hold it the entire period. Studies show that people who make no changes, change no correct answers to incorrect ones. Be sure to pick up a book from the library on test-taking.

Grades

As in any college experience, some method seems necessary to evaluate the work of students. So tests are given and projects are required. In an attempt to simulate a work environment, your instructor will tacitly assume the role of employer and assign you the role of an employee. So when you have work due, turn it in. Or the instructor will dock your grade as a true employer would dock wages. But don't worry about grades. If you are sincerely interested in a career field, the grades will come. Nothing will impress an employer more than to find a person who can do the job. Oh, others with high grade point averages might be considered before you. But the secret to success is productivity. Can you do the job? So forget grades. And when students in class ask about tests and grades, look up a few more definitions that you have to learn. Don't waste time.

If you receive a grade which seems incorrect or in any way unacceptable, begin with an inquiry of the instructor. When you have received a grade which you cannot accept, you should seek a remedy as soon as possible. If you must do additional work to get a grade resolution or even if you must retake the course, do. A failure isn't terrible. Yet if you have too many unusual grades, an employer may be hesitant to interview you. Learn the meaning of all grades, particularly I, F, N, X, W, P, and Z. Letter grades leave much room for interpretation. Be sure to have a say in the grade that becomes part of your transcript. When the world is about to end, the only remaining record will surely be your transcript. You'll live to regret not changing bad grades when you have a chance to do so.

Audit Courses Without Risk

If you want to try out a course without the risk of getting a poor grade on your transcript, then you can audit the class. You do all of the course work you choose. You take all of the tests you choose. And you may ask your instructor for a grade. But your transcript will only show an X (Audit.) You cannot count the credit toward graduation. But a tricky method to use is to audit the course completely. Do all the work. Take all the tests. Then after the term, pay for a comprehensive exam. Take the exam and add the credits to your transcript. No hazard here except you pay twice the credits. But that may be a small price to pay. Get it?

License Examinations

If as a result of your program of study you are qualified to take a license examination, then do it. Don't put it off. Get it while you are hot. When an employer asks you if you have a license, you can then say, "yes". Saying yes is so much better than admitting that you have met the requirements but haven't gotten around to taking the exam. If you say to an employer that you can go and get the license anytime, the employer will wonder why anytime wasn't before the interview!

(See page 93 for information about certification for technicians.)

Things To Find Out Fast

To work at learning is to become a true student. If you are sincerely interested in learning, then there are things to do for each course:

- ☐ Introduce Yourself to other students.
- ☐ Find a few people you can study with.
- ☐ Make sure you meet the skill level and all prerequisites.
- ☐ Check to see that your name is on the class list.
- ☐ Listen to the first session overview given by the instructor.
- ☐ Obtain a copy of the course outline, syllabus, and objectives.
- ☐ Find out which textbooks are required, which recommended.
- ☐ List course requirements other than tests: projects, labs, reports.
- ☐ Learn the instructor's full name and address.
- ☐ Record the office location and telephone number of the instructor.
- ☐ Determine where reference materials are located.
- ☐ Note open lab hours when a technician may be available to help you.
- ☐ Ask where the mailbox for the instructor is located.
- ☐ Decide how much time you expect to study for the course.

Keep Copies Of Everything

As a student, you are aware that you can never be sure if a paper you turn in will ever be returned. As protection, keep copies of everything: papers, tests, reports, and even projects, if possible. This information can then become a part of your personal file. Supposedly you have selected an occupation for which you are learning occupational skills. So why not begin to accumulate all sorts of useful and related information in file fashion.

With the choice of a vocation, the whole world is yours. Let yourself enjoy. Pass on the word to family and friends. Have them clip information from magazines and papers for you. Start a file of all notes, papers, copies of articles, plus catalogs. Anything and everything that is related can be useful. Spend $50 for a file cabinet. And accumulate. You don't have to memorize everything. Often knowledge is not so much knowing a fact as knowing where to find that fact.

Who To Contact First If You. . . .

....don't agree with a grade you received:	INSTRUCTOR
.....have a complaint against an instructor:	Department Chairman
.....have a complaint against another student:	INSTRUCTOR
.....have a complaint against the college:	Department Chairman
.....can think of course improvements:	INSTRUCTOR
.....get a poor instructor and want to change:	Department Chairman
.....get a bad deal on tuition refund:	Registrar
.....get sick and can't go to class:	INSTRUCTOR
.....must leave town during the term:	INSTRUCTOR
.....have an accident and can't go to class:	INSTRUCTOR
.....have a job shift change and want to switch sections:	Department Chairman
.....must be late for a class:	INSTRUCTOR
.....expect an emergency call during class:	Secretary
.....must transfer to another school:	Registrar
.....have to drop a course:	INSTRUCTOR
.....get a good instructor and want the instructor to be praised:	Department Chairman
.....want a copy of your transcript:	Registrar
.....want to look at your school records:	Registrar
.....have not received financial aid check:	Director of Financial Aids
.....want to spend more time in the lab:	Lab Technician

Make Corrections On Tests

A real sign of your serious intent is for you to submit written corrections to your instructor for evaluation. If the test item was important enough in the opinion of your instructor to be on the exam, then the test item is important enough for you to learn. If the test was the development or production of a project and you receive less than full credit, ask you instructor what is not correct. As time and facilities allow, make corrections and improvements.

You may find your instructor encouraging you to improve your work. Often an instructor will allow you to re-submit work until you receive full credit. You may find yourself turning in a project many times before the work is perfect. But why settle for less. You want to a technician, don't you? So who will employ you for long if you only get 80% correct on a job, then stop? No one! You will be expected to improve your work until it is complete and 100%.

Right To Fail

When you enroll for a course, you have some expectation that you will successfully complete the course. Or why bother? Oh, you may be interested only moderately in the subject of the course. Or you may be excited beyond description. Regardless, you do not enroll and expect to fail. Yet, if you make an effort and do your best to complete the course and still fail, be pleased. One important function of education is to allow you the luxury of testing your interest boundaries.

If you fail a course, you may want to repeat the course if you still feel you can or must complete the work. But if you eventually decide that the course simply isn't one you can pass, then you have reached a boundary to your interest and /or ability at that moment in time. Perhaps at another time you will be able to pass the course. Perhaps you may never pass the course. In either circumstance, remember that failing a course is not unnatural. We all have limitations imposed on us by our interests and abilities. A failure in a course is not a personal statement about your value as a person. You may well think that! But after a time, you should have enough confidence in your successes to override your feelings of failure.

In fact, if you ever do fail, you should be pleased to know precisely where your limitation is in that subject. When you begin to know your areas of limitations, you will also begin to know your areas without limitation. The sooner you can begin to probe your areas of ability, the sooner you will realize your full potential.

Registration

Once you have selected courses to take each term, the process of actually getting "signed up" begins. Often courses are offered only once a year. And that could mean trouble if there is a seat limit on the course. So you will want to enroll as soon as possible.

Register as early as you are allowed. Ask for a copy of the term schedule book well before the term begins. If you are able to pre-register, then do it. The risk of missing out on a critical course of a sequence is too grave to hold on to your cash for a few weeks until regular registration.

Find you way around the campus before classes begin.

Closed Section

Once a class section has been filled with students, and you are not one of the lucky ones, a few possibilities exist that may help you to get in.

1. Contact the instructor and ask that another seat be added for you.
2. Contact the Department Chairman to see if additional sections may open. Ask if the course will be offered in a subsequent term.
3. Sign up on a waiting list if one is available.
4. Watch the class seat list for the section. Often another student will drop the course. Then there would be room for you. If you happen to be first in line waiting for someone to drop, all the better.
5. Stand by the door to the class right from the beginning even if you have not registered. You can then readily see how many people attend. Further, you'll know who is in the section. So after the first session, you may find someone on the way to drop the course. Go with him / her. Add and drop the class together. This way you will have a seat for sure.
6. If you are unable to get registered for the course, then consider an alternate educational method. (See pages 50-52.)

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CHAPTER TEN

Plan For The Future Too

Choose your career by taking into consideration what you want from the next job you work at. But also consider what you may be doing several jobs from now. With jobs changing so rapidly, the job you want and enjoy today may change tomorrow. In fact, most of the jobs you may be working at ten years from now don't exist today. Why not give freedom to your imagination to draw a plan for several jobs during your career?

A combination of educational experiences separated by work experiences can be an excellent way for you to realize your greatest talents. Here are a few other combinations that seem to have a ring of success for the future:

Architecture--------Computer Programming--------Materials Research

Occupational Safety----------Environmental Health----------Chemistry

Health Careers-----------Electronics-----------Computer Programming

Electronics-----------Automotive Engineering ---------- Computer logic

Hydraulics -------------------Chemistry------------------Hydroponics

Possible Help Wanted Ads From the Year 1985

Salvage Technician

To work on LA and San Francisco sites recovering metals after earthquake. Based from Arizona coastal port of Phoenix. Pay excellent. Must have knowledge of street plan for either. Blood chemistry altered for Amer Gill Apparatus a must. Apply Mondays to Phoenix Hall.

Auto Design Computer Technologist

Knowledge of BOQ 26 with holograph and photography. 40 hour work month. Complete benefits. Must be willing to sign radiation sterilization clause. Call for appointment toll free 800-262-6262. Interviewer: Omega Program ADCP.

Biomed Electronic Technician

M.S. or equivalent in electro-medicine and one year plus in brain wave lab work. Rehabilitation of emotionally handicapped by electro-neural stimulation to restore normal synapse. Salary open. Electro Rehabilitation Association. Transpond 2x64 BETA.

Lat Design Reporter Technician

Use your landscape Architecture skills as a writer of site suitability studies for under ocean projects of CENTAUR. We need specs writers and program chiefs. Knowledge of International Under Ocean Building Code (IUOBC) a must. To apply, you must first visit work site. Appointment by TWIX EENF IUOBC.

Optics - Fibre Technologist

Communication Company needs one thousand new fibre optics technicians by the year 2002. If you are now in high school, write for our booklet that explains the Optics College potential for you. Placement guaranteed. Call "O" today.

Ask for Optics 8000.

Machinest-Computers Technician

Cobal a necessity. Watch NC-Process shop. Monitor CRT. Supervise Data Lynk. Select transponder timers. Send Vita TWIX DP-8746.

Molodetz Operator Technologist

$800 to $900 Weekly to the right worker. Pro in micro-circuitry and modular electronics. We are a future looking company. Let's look together. Must work 40 hours on iste in Fundlandia 600 miles East of New York City at 60 fathoms. Telex Twerk PB-Mo-FUND.

Laser Repair Technician

Retailer has an immediate opening for a rated holograph repair station technician. Salary open if you are qualified. Write J. C. Knox, C/o Martin Professional KOPFT Locators.

Computer Programmer Technologist

If you can stump our CPT 4626 on program Z2 we need you. Call for data and transmission appointment. If you do not have CRT Keyboard capability, visit any local CPT subscriber office. Telephone 800-800-4626 for your time slot. All new systems either used or given during test become property of CPT with Inter-World Patent rights.

Cement & Plastics Technologist

Willingness to work at least 4 day week a necessity. Refabricate Hydro Electric Generator Dams for Fijords. Project term 2 years. Must sign on and work full project to be elegible for two year position bonus. Apply in person at 0815 GMT FRT 26 Shotz Strasse B.

Draftsman-Programmer Technologist

Experience with Dyno Reflex model 264 Plotter a must. Plus Cobal Fortran and Data F helpful. Must work 2 day week at least $26K plus benefits. Data Lynk Vita BPP MXCO.

Architect - Solar Technician

Use IBM T222-B to crank out house plans for mail order sales. Technical terms a must. No drawing experience necessary. IBM 922-B does all drafting. Applicant must have efficient IQ 2 rating. $600 week minimum. Twix your bid to 2621 TT.

Fire Science Technician

Repair/Install advance warning fire alarms in module apartments. Knowledge of NFPA Bulletin FSP a must. Use data-link phone-key-board for computer interview test. TWIX 2642 PF. Anytime.

Surveyor-Civil Technologist

Work in the ocean of your choice. GEO Physical Grant mapping all ocean bottom. Must work 30 days on 60 days off. Hazardous duty pay. Salary from 6,000/month depending on International Union status. Send sample of ocean map work and results of year 1999 civil competitive exam to: John K. Aquana Enterprise Marsailles France No. 2St. Charles Place.

Museum Curator Technician

If you remember how typical household appliances were operated in 1970's like a dicer or mix-master, you can find an interesting and rewarding place in our museum of the 70's. Must work well with children. Obviously age an asset. $250 weekly. Apply in person. Wear Museum 26 Elison Street. Washington.

Hydroponics Technician

600 new plants in Mexico need experienced Hy. Tech. Can you and your life mate manage a 1800 unit farm at 86%? If so, we need you. Salary $26,000. Trial Period 30 days contact Computer Search Job Bank Inc. Office nearest you for application.

Geothermal Technician

If you can repair steam engines, guages, and transmission lines, you may find an excellent future 10 years with our Pennsylvania Station. Placement after 10 years service guaranteed with retraining into our projected fussion station. Relocate then to Ohioana. Call 800-261-1080 for details.

Consumer Electronics Technician

Reliable bench technician $20,000 antenna installer $30,000. Salesman Floor $32,000. Branch store manager $26,000. Apply in person. Television Shack West. Airport International Terminal Center. ORT.

Write Your Own Want Ad For The Future

Give some thought to the want ad you may want to respong to in the future. Let your imagination run free. With a pen and pad, shape a job that you would like to have in 1979, or in 1985. I've written a few help wanted ads that seem to be for me. Here are the sorts of ads that I may respond to in the future:

1979

INDUSTRIAL EDUCATION DIRECTOR

Bi-Lingual Russian-English Industrial Electrical Control Multi-National company with ten year contract to supply consumer goods process machinery needs person with industrial electrical control background to develop training program for Russian speaking maintenance crews. Electrical license necessary. MI, ED, or MEP preferred. Must spend 6 months yearly in Kiev on Baltic Sea. Salary from $32,000 plus expenses. Car. If you like to travel this job is for you. Send vita, biography, resume, in your own Russian handwriting to Converyor Stansya, 216 Elm, Geneva, ILL, Attention: Ralph Rolph.

1985

EDUCATIONAL CONSULTANT

Technical Russian English Fluent language Multi-National corporation based in Geneva, Switzerland needs qualified consultant to supervise member firms as they construct and implement training programs for electrical | hydraulic | pneumatic contract. Machinery maintenance. Unlimited travel pass on super Swiss. Salary from $62,000 on contract. Also negotiate and translate at sales meetings, international patent hearings, and policy meetings for corporate leaders. United States Passport and elaborate security clearance manditory. Contact Russian Professional recruiters in New York. TWIX 261 for appointment.

Another Book to Consult: **What Color is Your Parachute?**
BY: Richard Bolles. Published By:
Ten Speed Press, Box 7123, Berkely,
California 94707 $4.95.

A Practical Manual
for Job-Hunters
& Career-Changers:
Revised
1977
What Color Is
Your Parachute?
RICHARD NELSON BOLLES

This job hunters and job changers guide is a good book to read even if you aren't in the job market yet. Career Plotters can draw helpful tips on job-search procedures that enable job seekers to turn the tables and screen out employers who aren't interesting. This manual also assists career changes by suggesting methods to evaluate career goals. Tune in on your career program with this myth shattering book. Revised yearly, the appendix section contains bibliographic reference to a great number of other specific help books.

Plan A Sequence Of Careers

Since you will want to continually upgrade so as to never get behind the old eight ball of technology, then you should plan for a sequence of careers. The sequence either implies a sequence of georgraphy, or a sequence of pay or a sequence of change for whatever you see as desireable and possible.

To give you an example of what my sequence of careers might be, based on my background, I've written out what could be one senario for me. Take a look and you'll get the idea. Then do your own.

Sequence Of Careers Chart

Years	Job Title	Employer	Education	Job Duties
1957-61	Student	None	High School	None
1962-66	Russian Translater	U.S. Air Force	College	Translate Russian Documents to English
1967-68	Electrician Apprentice	Electrical Contractor	On-The-Job Training Self Study	Work as Helper to Electrician
1969-70	Electrician Journeyman	Electrical Contractor	Self Study Seminars	Install Repair Electrical Systems
1971-72	Electrician Master	Electrical Contractor	Self Study Seminars	Maintain and Repair Electrical Controls and Systems
1973-74	College Instructor	Community College	College	Instruct Students Moving into Electrical Career
1975-78	Education Administration	Community College	College Self Study Seminars	Coordinate Instruction of Students in Trade and Technical Education
1979-84	Director of Industrial Education	Multi-National Corporation	College Self Study Seminars Research	Direct Instruction Update Seminars for Employees of Companies Doing Business with Russian Speaking People
1985-05	Educator Writer Speaker Advisor	Colleges Organizations Firms	Self Study Seminars Research	Instruct Trade and Tech. Instructors. Write Textbooks, Manuals, guest Speaker Lectures for Companies, Colleges, Consult on Individual Basis with Firms.

Retirement 2005 at 62 Years of Age To Do Other Things.

Sequence Of Careers Chart For____________________________________

Years	Job Title	Employer	Education	Job Duties

Retirement______________**at**______________**years of age to do other things.**

Sequence Of Careers Chart For____

Years	Job Title	Employer	Education	Job Duties

Retirement_______________at_______________years of age to do other things.

Consumerism in Education

As interest on the part of federal and state agencies increases, legislation will be enacted to prevent consumer abuse in education. Institutions will be forced to recognize that you as a student are a consumer as well as a tax payer. Therefore the education market place must concern itself with fair practices, much as business and industry has done in the past several years. This can mean a better education for you.

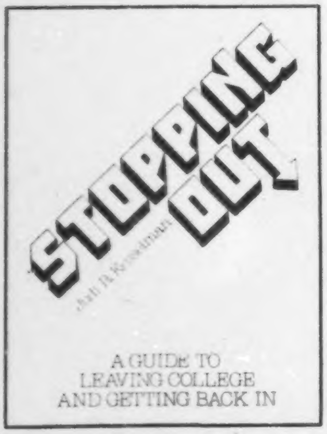
As you participate in buying education, the future is bright that you will be getting a better deal.

A Final Comment

Education is the life long, life adjusting process which allows you to exercise your right to participate in society at a level of expectation and fulfillment which you determine. Realize that! You determine where / who you want to be. So dream on. Before the fact is the dream. But remember that if you expect to attain your dream of the future, a detailed plan is imperative. Sure you live with the priorities of the present yet you must also plan for the future. Constantly look ahead with a continuing need to learn and to adapt what you know to changing world. Constantly updated skills will be necessary to cope with technology and rapidly changing life circumstances.

Through self-examination, you can move toward personal fulfillment. This opportunity manifests itself most profoundly in your right to an education. The chance and right to learn. The choice can be yours, the success can be yours. Seek and achieve both.

Another Book to Consult: **Stopping Out** By: Judi R. Kesselman
Published by: M. Evans & Company
New York 10017 1976 $3.9



This is a first comprehensive, practical handbook for students, parents, and school administrators to stopping out - the rapidly growing trend among college students to take time off from the traditional four year curriculum and later return to school. In addition to affirming how prevalent the practice of stopping out has become, Stopping Out tells how well it is accepted (and where) and how to go about it without ruining the opportunity for re-admission or later graduate schooling.

Appendix

Contemporary Developments In Technology Education

The most important recent trend in technological education is the interest of many universities in providing baccalaureate curricula in engineering technology. In some cases, the technology curricula are offered within colleges of engineering while in others these programs are provided through colleges of technology or other administrative units. Under either of these organizational plans, the faculty of the technology unit is likely to be composed heavily of teachers with considerable industrial or other experience relevant to the curricular specialty. A major fraction of those who teach technical courses may be engineers. A factor that has disturbed engineering faculties is the rapid growth in student enrollment which has followed the inauguration of nearly all of the new baccalaureate technology programs while engineering enrollments have remained almost static. This condition may be attributed to the fact that only a small fraction of high school students show a strong interest in mathematics and science. Yet all are exposed to the marvels of an increasingly technological world. Thus an educational channel that provides professional or para-professional status through technological employment without the rigorous math-science requirement of engineering curricula appeals to many high school graduates.

An important contemporary educational experiment is noted in what are called "two-plus-two" baccalaureate technology programs, those designed to attract enrollment from students who have previously achieved an associate degree. The associate degree vocational-technical programs of many junior colleges are attractive to some students, but they still suffer in enrollment from their historical connection and, in some states, current association with "terminal" education. However, growing numbers of universities and colleges are accepting at least the above-average graduates from two-year technical programs into baccalaureate curricula in technology. Usually some academic time is lost by transfer, but if these transfers prove reasonably successful, the result on enrollments in junior college technical programs may be dramatic. The increased enrollments would then produce an enhanced frow of associate degree technicians into industry as well as a consistent flow of transfer students at the junior level into baccalaureate technology programs.

(Reprinted from Final Report on Engineering Technology Education Study by the American Society for Engineering Education (February 1972)

Changes In Engineering Technician Education

The education of the engineering technician and the engineering technologist hears an inadequately defined but important relationship to engineering education. Engineering education programs appear to be again undergoing a rapid evolution. After a period in which undergraduate engineering curricula were being extended to a point where only exceptional students finished in four years, and five-year undergraduate curricula were being tried in a few institutions, a reversed trend has developed. Baccalaureate engineering curricula that can realistically be completed in four years, of comparable length to curricula in liberal arts or science, now exist in significant numbers, a trend which seems likely to continue. This trend is not due to a belief that engineering education can be completed in a normal four-year curriculum. Instead, it seems related to a growing belief that an engineer who carries full professional responsibility should have a more extensive educational background that is commonly credited in professional circles to the baccalaureate degree.

Roots Of Baccalaureate Technology Education

Baccalaureate technology curricula have roots in several areas of education. First, there have long been baccalaureate curricula in mechanized agriculture, building construction, printing, glass manufacture, furniture production, and other industrially related areas. In some areas, such as textiles and petroleum, engineering accreditation for the program was sought; in others, it was not, probably because the arts were more important than the sciences in those fields. Another source of technology curricula has been the industrial arts programs of certain colleges of education where an evolution has taken place and "industrial technology" curricula have emerged. Because mathematics and science were not traditionally emphasized in curricula for industrial arts teacher preparation, the technological curricula stemming from this source have been initiated with about equal emphasis upon math-science-technical requirements and non-technical studies. It seems evident that the less encompassing math-science-technical content of curricula that have developed out of industrial arts education, commonly termed industrial technology, along with their emphases upon management, account for rather rapid increases in their enrollments. A third source has been vertical extension to the baccalaureate level of the curricula of technical institutes which usually include a relatively large math-science-technical content.

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Employment Of Technicians And Technologists

As yet the number of graduates from baccalaureate technology curricula is small compared to the number of engineering graduates, but the growth trend is clearly upward. The absorption into industry of these graduates should not provide any problem at least for the next decade. Engineering technicians historically have been in short supply.

Data from the Bureau of Labor Statistics indicate that currently about one million technicians are employed (BLS, 1970). Of these, about one half have no formal education beyond high school. The remainder have one or two years of post-high school education, but only half of these seem to have received an education two years closely related to their employment as technicians. It is likely that future utilization patterns for technical manpower will call for enhanced preparation of the individuals entering technical employment. By 1980, employment priorities may justify some 50 percent of new entrants to technician jobs to be educated to the associate-degree level and another 25 percent to have baccalaureate technology degrees. If four-year engineering and industrial technology education should grow in volume to equal the production of engineers, it would then require, allowing for usual losses, nearly a ten-year output from such baccalaureate technological curricula to replace with such graduates one-fourth of the one million technicians now employed by industry and government. By that time the needs of industry for technological personnel would doubtless have grown commensurately.

Industrialists explain that they employ for technical jobs the best qualified persons available and provide as much training as is essential to achieve the necessary productivity. Baccalaureate technologists are needed, but in their absence the best qualified technicians will be upgraded to achieve an acceptable result. The extent of the need for baccalaureate technologists will be largely invisible until such graduates become available in significant numbers for employment. The increased cost of using minimally qualified employees is equally indeterminate.

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What is an Engineering Technician?

An engineering technician is one who, in support of and under the direction of professional engineers or scientists, can carry out in a responsible manner either proven techniques, which are common knowledge among those who are technically expert in a particular technology, or those techniques especially prescribed by professional engineers.

Performance as an engineering technician requires the application of principles, methods, and techniques appropriate to a field of technology, combined with practical knowledge of the construction, application, properties, operation, and limitations of engineering systems, processes, structures, machinery, devices, or materials, and, as required, related manual crafts, instrumental, mathematical or graphic skills.

Under professional direction, an engineering technician analyzes and solves technological problems, prepares formal reports on experiments, tests, and other similar projects or carries out functions such as drafting, surveying, technical sales, advising consumers, technical writing, teaching or training. An engineering technician need not have an education equivalent in type, scope, and rigor to that required of an engineer; however, he must have a more theoretical education with greater mathematical depth, and experience over a broader field than is required of skilled craftsmen who often work under his supervision.

The Certification of Engineering Technicians

It has long been recognized that significant advances in technology are the result of teamwork in which the engineer, the scientist, the technician and the craftsman are brought together in a productive relationship. Engineers and scientists have legal and/or professional requirements for membership in societies that serve their professional needs and provide recognition of their qualifications, attainment, and interests.

It has been a matter of concern to engineers that there was no universally recognized acceptable procedure to provide recognition for the qualified engineering technician. In response to this concern, the National Society of Professional Engineers established the Institute for the Certification of Engineering Technicians in 1961. Engineering technicians who desire recognition by a national examining body should make application to the Institute.

Citizens and residents of the U.S. or its territories engaged in work such as is described in this brochure may apply for certification.

Certification does not in any way license the recipient to practice engineering.

What is the Institute?

The Institute is an examining body and exists to perform the function of evaluating the qualifications of those who voluntarily apply for certification. Evaluation is accomplished through investigation—including recommendations, endorsements, and examinations as appropriate—of the applicant's work experience, character, and knowledge. As evidence of satisfactory attainment, the Institute grants and issues certificates in one of three grades, and also maintains a registry of holders of such certificates.

It is not expected that the three certification grades will alter the classification schemes within company or governmental establishments, but the possession of a nationally-recognized certificate should be immediately meaningful inasmuch as it does indicate the attainment of certain minimum experience and educational background. The fact that the seeking of certification on the part of an engineering technician is purely voluntary should be most significant to employers and to engineers with whom the engineering technician works in the team relationship.

The Board of Trustees

The Institute's Board of Trustees consists of four registered Professional Engineers and four Senior Engineering Technicians. The engineer members are appointed by the President of the National Society of Professional Engineers. The technician members are selected by the Board itself from among those qualified in the grade of Senior Engineering Technician. All applications for certification are reviewed for appropriate action by the Board.

How to Become Certified

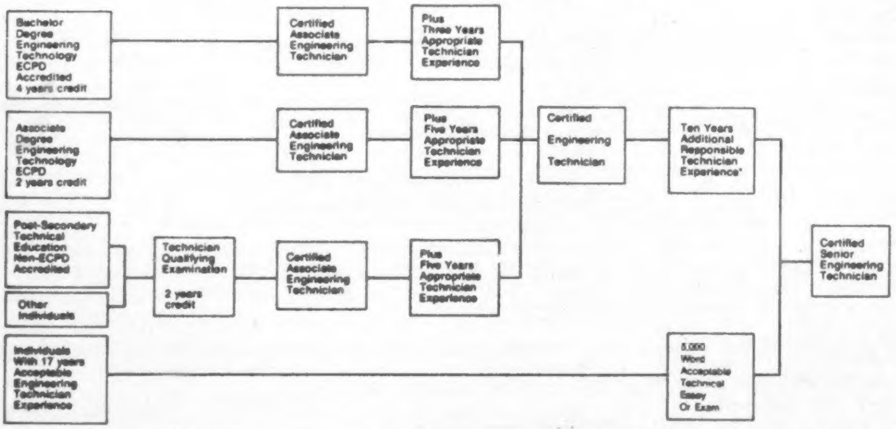
The first step toward becoming certified is to obtain an application form. A form to facilitate this is included in this brochure.

The application form asks for a detailed description of the jobs performed and the level of technical attainment and responsibility in each. References are required from two to three engineers (preferably registered professional engineers) depending on the membership grade sought (see Criteria Chart). The Board accepts endorsements from supervisors with a minimum of a B.S. degree in engineering, mathematics, or science. The Board will base its decisions on the applicant's job records, endorsements received, examination results, and specified educational attainment depending upon the grade for which one applies.

The examination is an objective multiple choice, open book test designed to measure knowledge normally expected of two-year technical institute graduates. Information concerning examination dates, testing centers, and general content is provided with the application or is available upon request from the Institute by using the request form in this pamphlet.

Applicants with seventeen years of appropriate engineering technician experience are not required to take the examination to become certified. A 5,000 word technical essay is requested by the Board of the Institute after the applicant's experience resume and endorse-

1973 ICET Minimum Certification Requirements


Bachelor Degree Engineering Technology ECPD Accredited 4 years credit
Associate Degree Engineering Technology ECPD 2 years credit
Post-Secondary Technical Education Non-ECPD Accredited
Other Individuals
Individuals With 17 years Acceptable Engineering Technician Experience
Technician Qualifying Examination 2 years credit
Certified Associate Engineering Technician
Certified Associate Engineering Technician
Certified Associate Engineering Technician
Plus Three Years Appropriate Technician Experience
Plus Five Years Appropriate Technician Experience
Plus Five Years Appropriate Technician Experience
Certified Engineering Technician
Ten Years Additional Responsible Technician Experience*
5,000 Word Acceptable Technical Essay Or Exam
Certified Senior Engineering Technician

*After January 1, 1979, technicians applying for advancement to the Senior level will be required to prepare the 5,000 word technical essay for evaluation By ICET.

ENDORSEMENT REQUIREMENTS

ASSOCIATE ENGINEERING TECHNICIAN = None
ENGINEERING TECHNICIAN = Two Professional Engineers (or equivalent)
SENIOR ENGINEERING TECHNICIAN = Three Professional Engineers (or equivalent)

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About The Author

Born in the year of the zinc penny, David Ullian Larson had an uneventful life until 13 years. At that age he was flying a kite with a fine cloth covered wire. The results were predictable: The kite eventually dipped so that the kite wire touched a high voltage line. Larson was practically electrocuted. One would think he had been adequately conditioned in the true Pavlovian tradition against playing with little wires ever again.

But after graduation from the East European Language Program at Syracuse University and a four year enlistment in the United States Air Force as a Russian Language Translater in Europe, he returned to the States and became an electrician. First he studied and worked to become a journeyman. Then a master electrician. Another four years of playing with wires seemed sufficient to him.

So at age 30, he decided to take advantage of the G.I. Bill to "do" college. And do it he did. In two years he racked up two Associate Degrees and a Baccalaureate Degree, graduating with honors in each case. During this same period he worked as a part-time instructor for a college, as well as on a one year contract as a full time college teaching technician at Lansing Community College.

After these two years of college experience, a position opened as staff assistant to the Engineering Technology Department Chairman at Lansing Community College. He successfully applied for the job. Working in that capacity for two years, he has had an excellent opportunity to find out how the system works.

Because of his first-hand experience as a college student, college graduate, college instructor, and college administrator, Larson is well qualified to help prospective technicians to train for a career with a future.